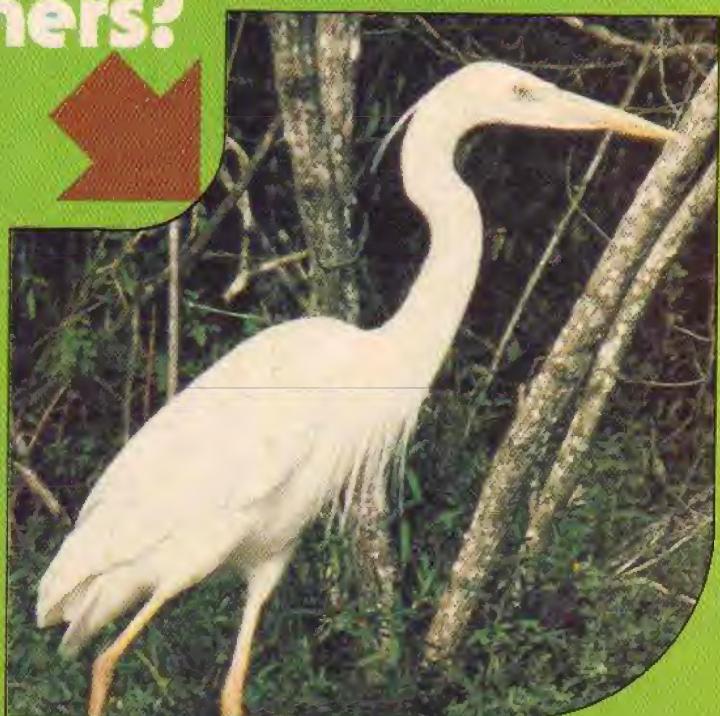
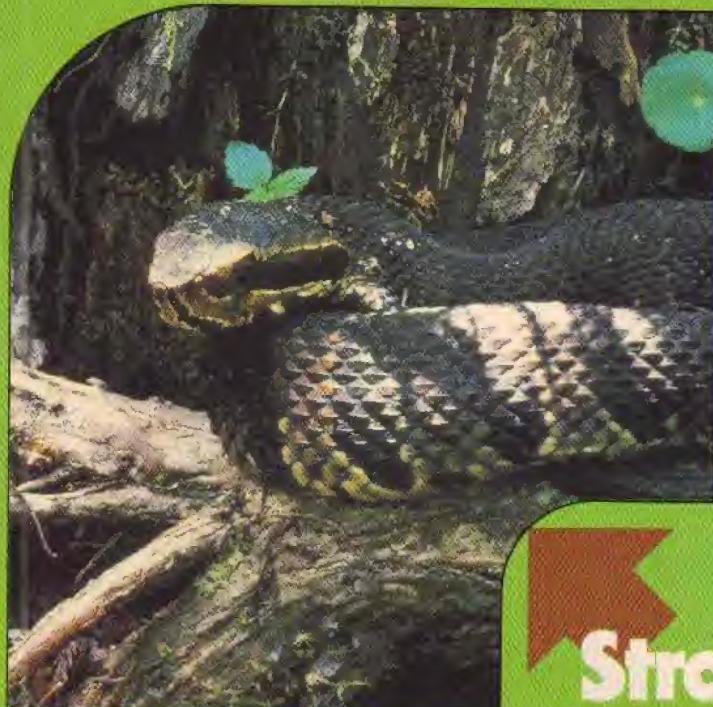


# 321 CONTACT

Inside: Join the Rockhound Gang!



# Foot Power!



No, not this kind. We mean the kind you use to pedal your bicycle. In the future, people may be using bikes for lots of their traveling. But these future cycles will look very different from the bikes you ride today.

Imagine zooming along on a bike covered with a plastic shell. Or how about cycling while you lie flat on your stomach!

You may not be quite ready for a ride on one of these far-out bikes yet. But if you'd like to get a look at them, turn to page 22.

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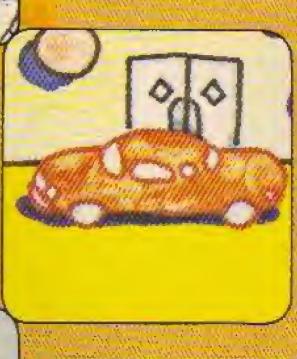
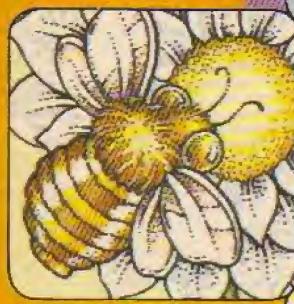
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# 321 CONTACT

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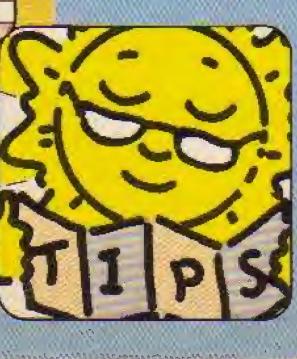
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## Featuring This Month

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# Odd Couples

**PARTNERS  
IN THE PLANT  
AND ANIMAL  
WORLD**

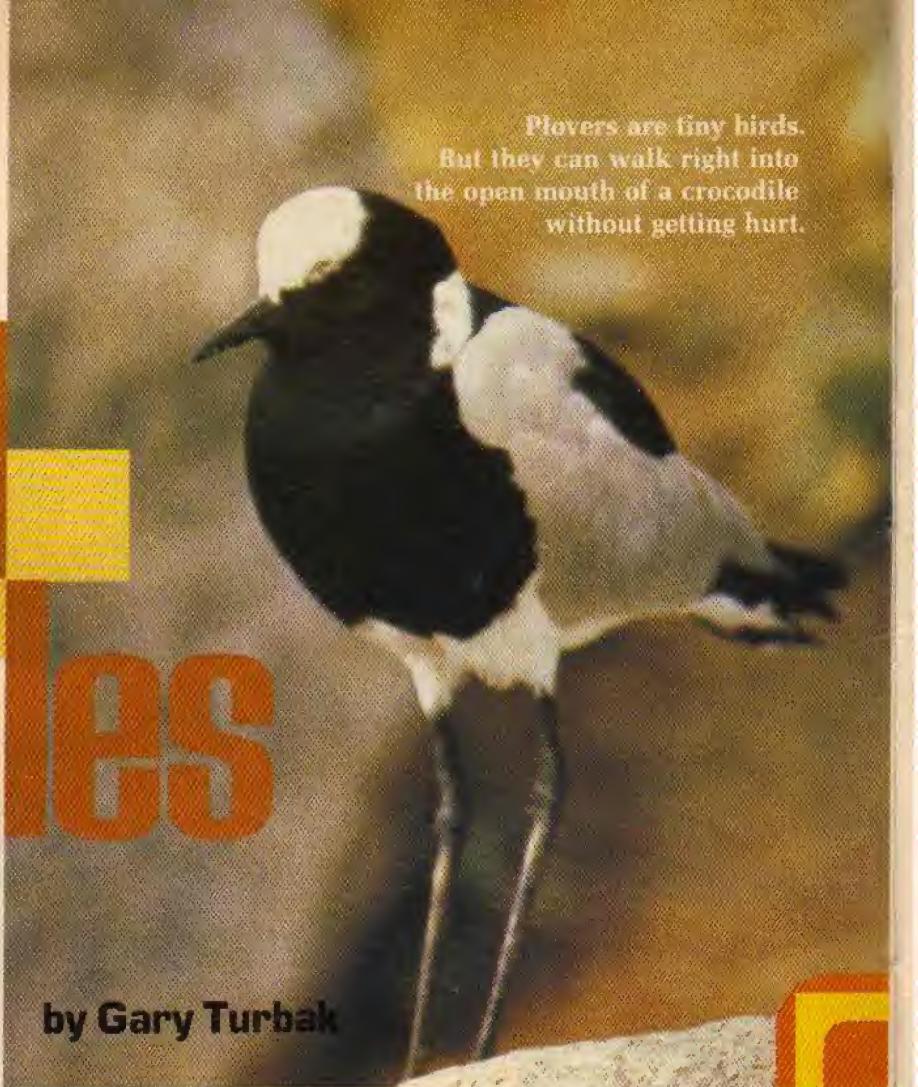
Can you imagine going for a walk in a crocodile's mouth? Of course not! Nothing could do that and survive. Nothing except a harmless little bird called a plover, that is. When a croc sees a plover, it opens its mouth wide. The plover hops in. Inside, the bird eats the bloodsucking leeches that are found there. After finishing this daring feat, the bird hops away. The plover has had a tasty meal. And the crocodile has gotten rid of those annoying leeches.

The plover and crocodile are animal partners. They have found that they can help each other. This kind of partnership is called symbiosis (sim-bee-OH-sis). That word means "living together." This kind of arrangement may sound a little odd. But it's not as unusual as you might think. Many animals have found ways of living together and helping each other.

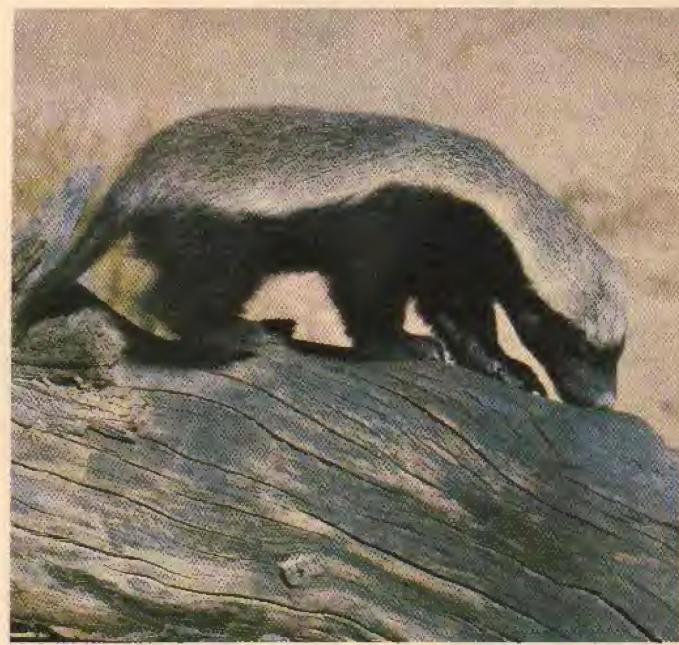
## **Honey Eaters**

Food is often the reason an unusual team gets together. Take the honey guide bird which lives in Africa. This little bird loves to eat beeswax, but is

Plovers are tiny birds. But they can walk right into the open mouth of a crocodile without getting hurt.



by Gary Turbak



**Above:** This little furry animal is a ratel. It works together with a honey guide bird so that both can find their favorite foods—honey and beeswax.



too small to break into a bees' nest very easily. To get its favorite food, the bird works with a small, furry animal called a *ratel*. The slow-moving *ratel* eats honey but can't find a supply on its own. So the honey guide scouts out a bees' nest and gives a chirping call. As the *ratel* moves forward, the bird flies ahead and calls again. When the *ratel* reaches the bees' nest, it rips it open with its sharp claws. It enjoys a sweet feast. Then the honey guide gets to finish off the wax from the honeycomb. Together they make a good team.

Sometimes one animal will help to feed another in exchange for protection. In the Florida swamps, there are large, fish-eating birds named *herons* and *ibises*. They make their nests in the trees. At the base of those trees live water moccasin snakes. These poisonous snakes come there because the birds drop bits of fish when they eat. The snakes get a free meal. At the same time, they scare ➤

**Left:** This bee is covered with grains of pollen. Some will rub off on the next flower it visits. That will help the flower to produce seeds and fruit. The bee uses the rest to make honey.



A big crocodile depends on its little partner, the plover, to remove leeches from its teeth.



**Above:** At the base of a tree, a water moccasin snake gets bits of fish to eat. The scraps come from herons and other big birds which live up in the tree's branches.

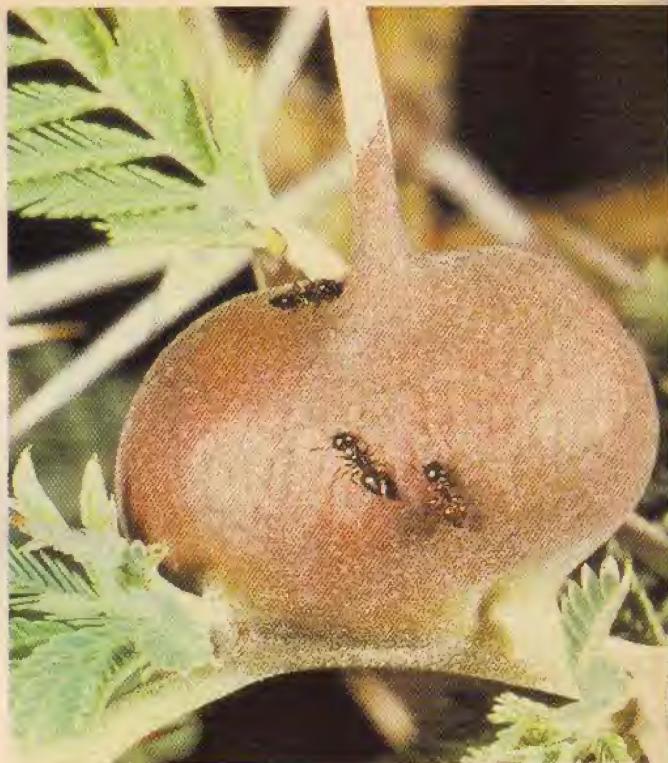
**Right:** Snakes help the heron to survive. They kill raccoons and other animals that would gobble up its eggs and chicks.

away raccoons and other animals that would eat the birds' eggs.

### Plant Partners

You might think that a plant wouldn't have much to offer a partner. But that's not true. Think of a scene you may have watched in your own yard. The flowers are in bloom, and bees are flying from blossom to blossom. Plants must trade pollen with each other so they can make seeds. The bees carry this pollen. Their reward is the sweet nectar they use to make honey. Both the bees and the trees are getting just what they need.

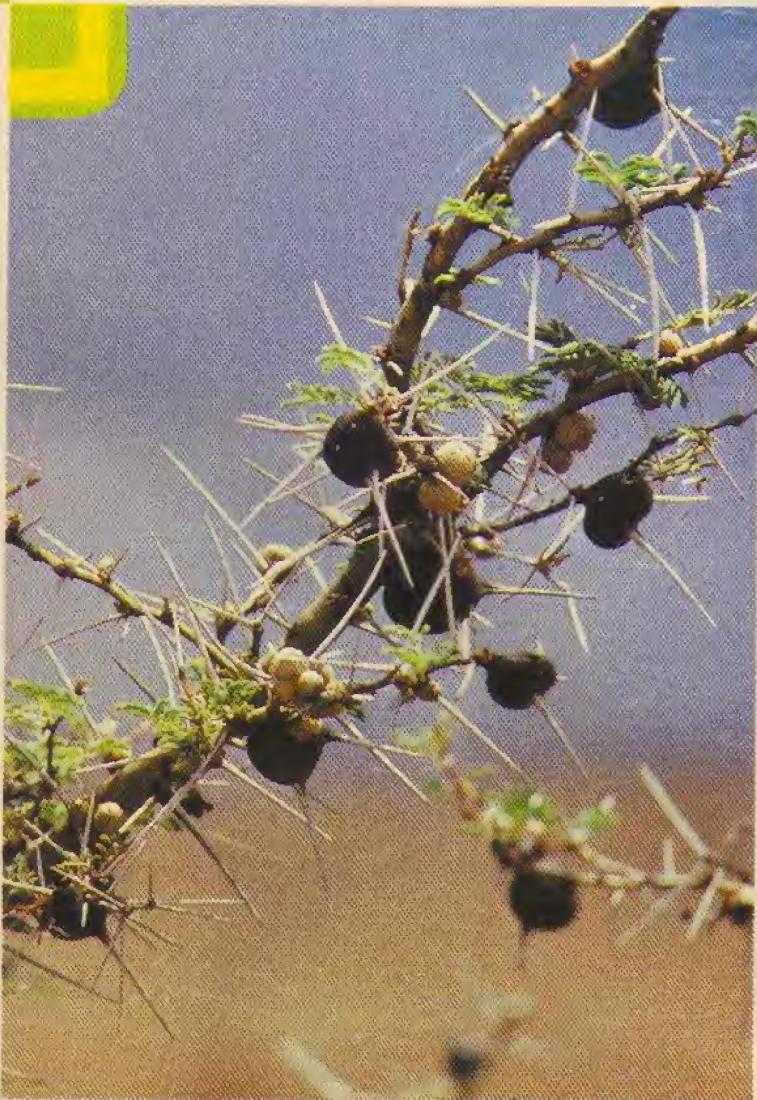
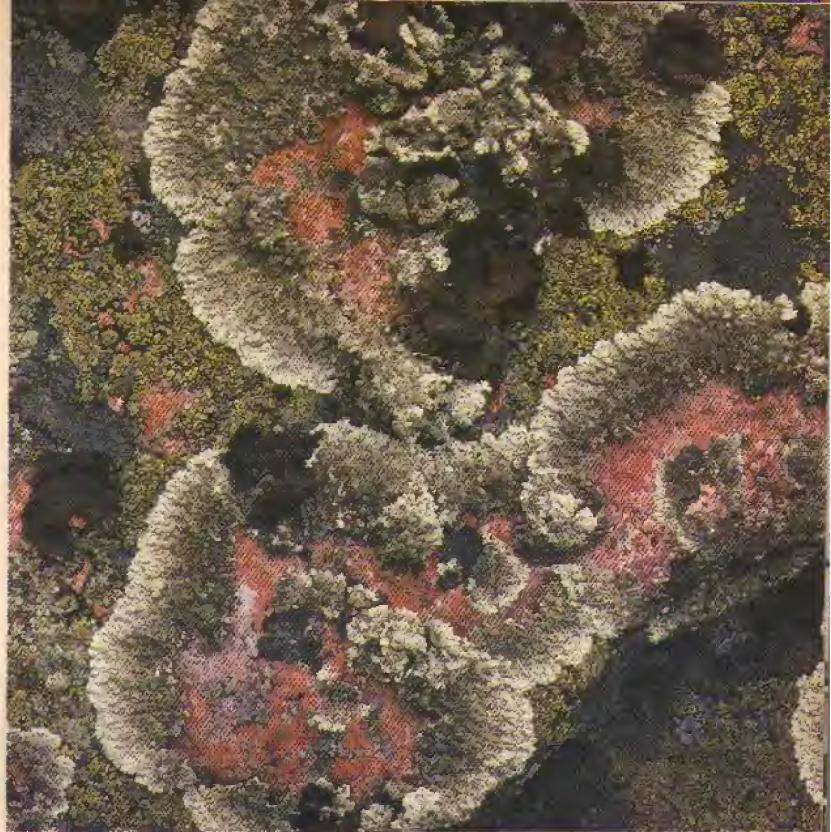
Then there's the acacia (a-KAY-shuh) tree which grows in the warm lands of Central America. It gives off a sweet nectar from the base of its leaves. The nectar attracts certain ants. They move into the trees and feed on the nectar. At the same time, they give the



**Right:** Two simple plants live together to form this lichen (LY-kun). It grows on rocks or trees.

**Left:** Fierce ants help to protect the acacia tree. They bite and sting other plant-eating insects to keep them away.

**Below:** Ants make their home on this acacia tree. They also get their food there.



tree protection from other plant-eating insects. These ants can sting and bite fiercely. And they do just that whenever any leaf-eating insects try to invade their trees.

Sometimes two plants even get together to live as a single unit. One such partner is the fungus. It's one of the few plants that can't make its own food. So the fungus teams up with a bluish-green plant called an alga. Although the alga can make its own food, it needs water to grow. For that, it must rely on the fungus which absorbs water rapidly. The unit they form is called a lichen (LY-kun). These small, dull plants don't look very impressive growing on rocks or tree bark. But they're such a successful team that some of them have lived 4,000 years.

So far, you've been reading about several examples of one kind of symbiosis called mutualism. The arrangement helps each partner, although they don't always get the same benefits. But some partnerships aren't so equal.

### Fierce Friends

There is a ferocious animal that seems to live in a one-sided partnership. A large hawk called the osprey builds a big platform nest for its eggs. Smaller birds such as sparrows and wrens often make their homes under the ➤



**Above:** Ospreys are large fish-eating hawks. They build big platform nests made of twigs.

osprey's nest. They're safe there because the osprey eats mostly fish. And the big bird's presence helps to protect the little birds from their enemies. But the osprey gets nothing in return.

How about a one-sided partnership in which one member actually lives off the other? Think of the mosquito, for example. This pesky critter bites people and animals because it must have blood to nourish its eggs. So a mosquito lights on your arm and—zap! What do you get in return for your valuable blood? Only a bothersome itchy spot, if you're lucky. But if you were visiting a warm tropical land, a mosquito bite might give you a disease called *malaria*.

Animals don't usually form such nasty partnerships with people, of course. Just think of the help we get from—and give to—cows and other livestock. And the human partnership with animals includes pets as well. Do you have a pet dog or cat? If so, you feed the animal and give it a home. In turn, it repays you with affection and loyalty. You and your pet are living in a kind of symbiosis.



**Above:** The mosquito is a pesky critter. It forms a one-sided partnership with people by sipping a bit of their blood. All it leaves in return is an itchy place.

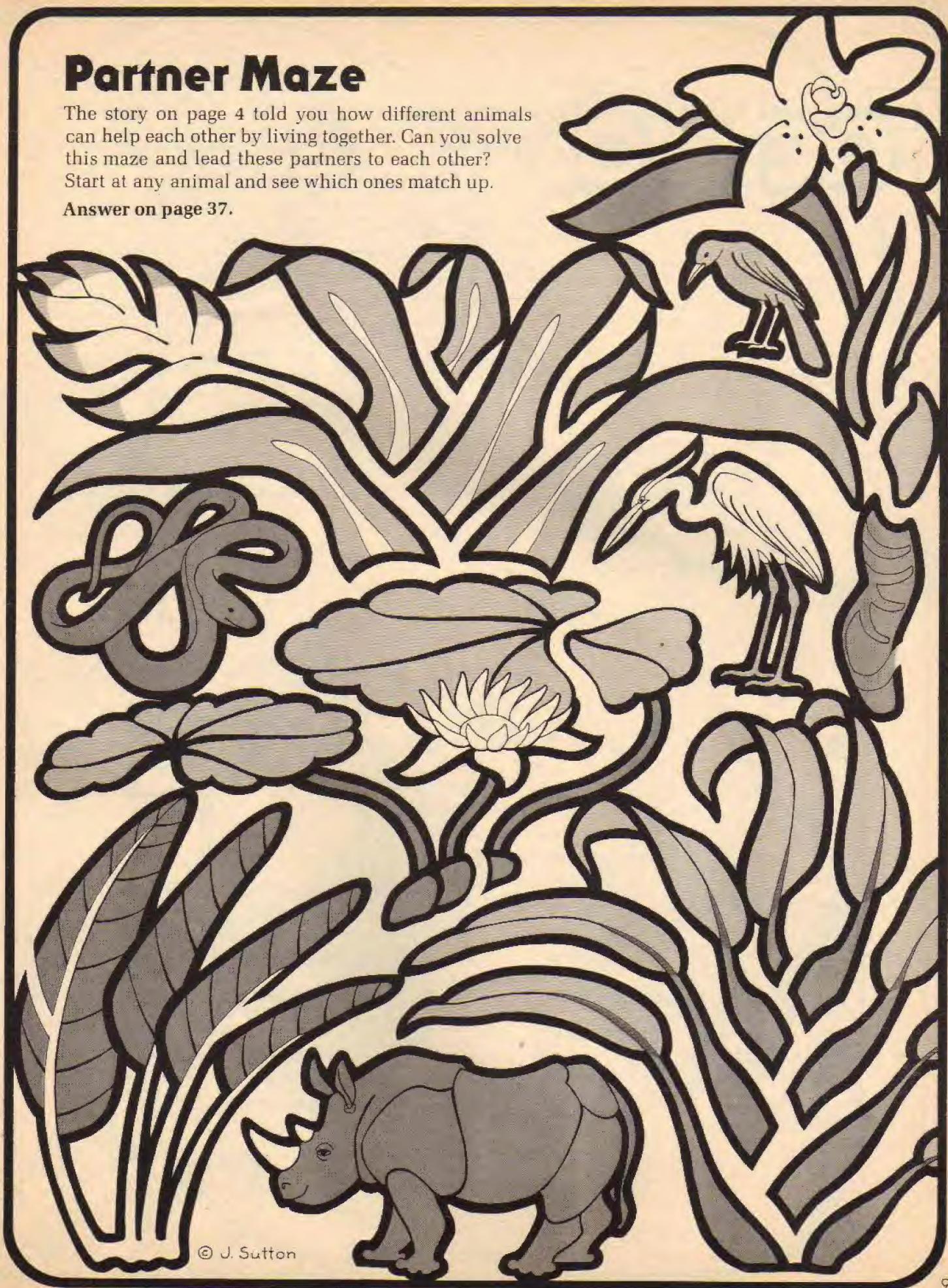
**Below:** Little birds like sparrows often settle near an osprey's nest. Other animals don't bother them because the big fierce birds live nearby.



## Partner Maze

The story on page 4 told you how different animals can help each other by living together. Can you solve this maze and lead these partners to each other? Start at any animal and see which ones match up.

Answer on page 37.



# Factoids



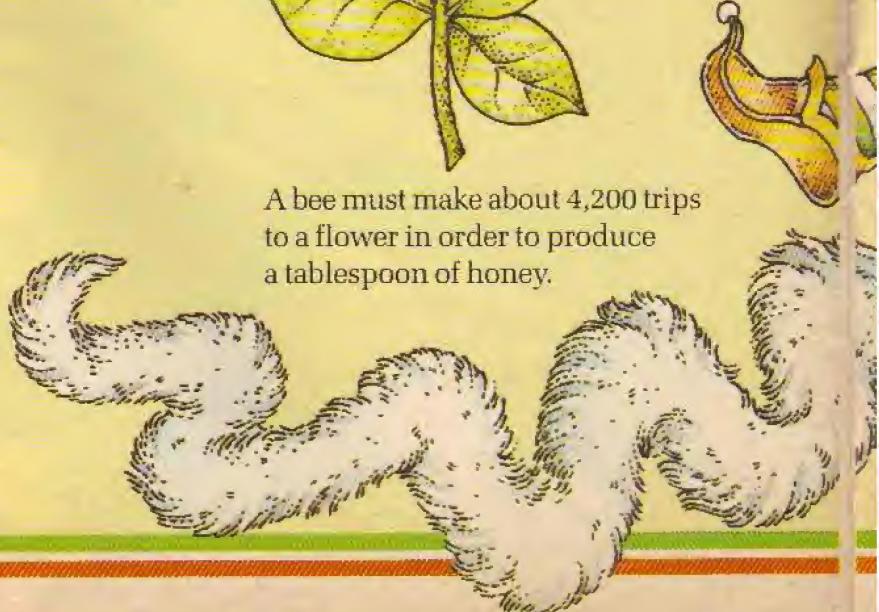
There is a mountain on Mars three times taller than earth's tallest mountain, Mt. Everest.

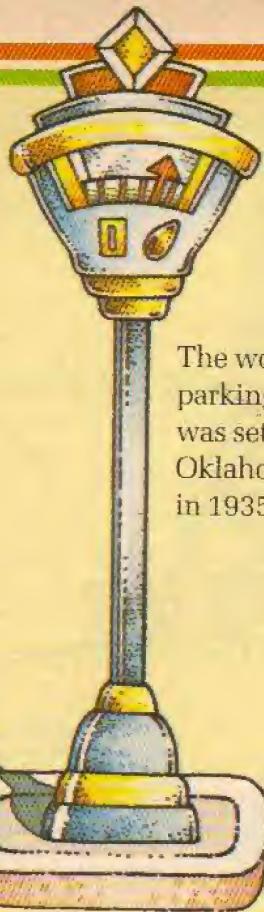


The Irish Wolfhound and Great Dane are the tallest breeds of dogs. They measure as much as 39 inches from their shoulders to the floor.



A bee must make about 4,200 trips to a flower in order to produce a tablespoon of honey.

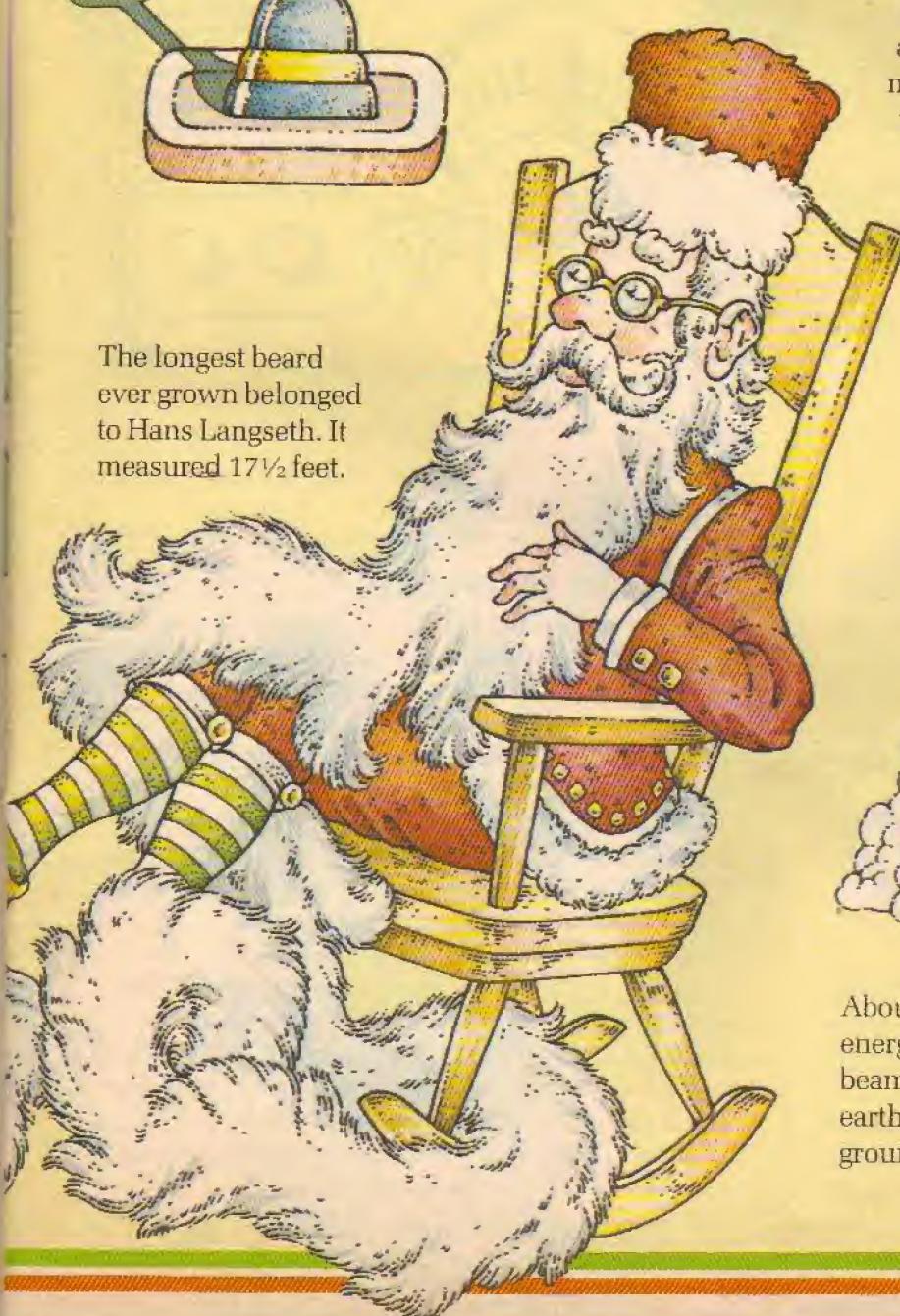




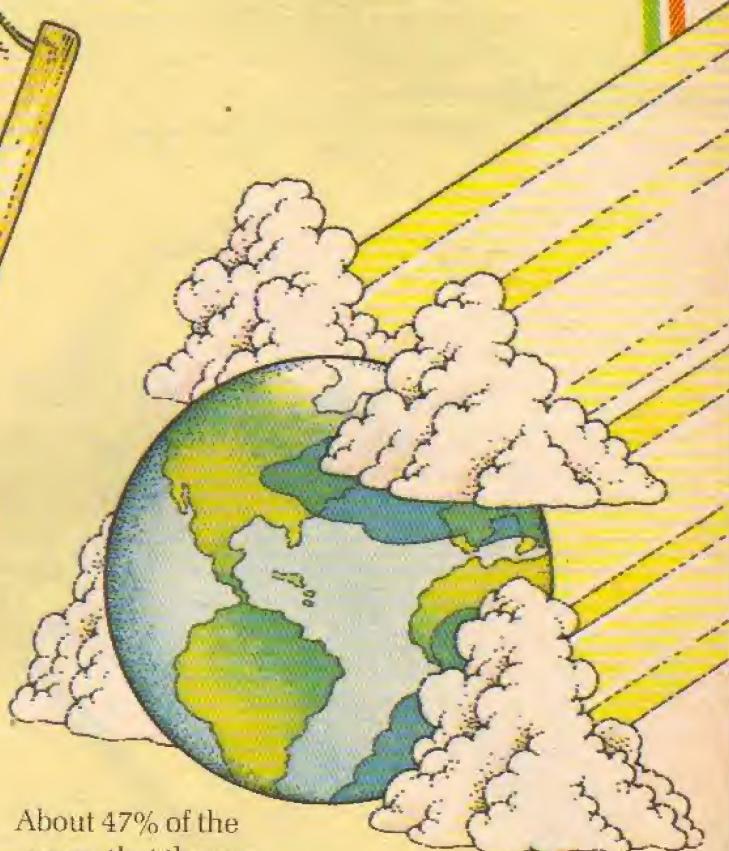
The world's first parking meter was set up in Oklahoma City in 1935.



It takes your blood about 23 seconds to make a complete trip through your body.



The longest beard ever grown belonged to Hans Langseth. It measured  $17\frac{1}{2}$  feet.



About 47% of the energy that the sun beams toward the earth reaches the ground.



# Any Questions?

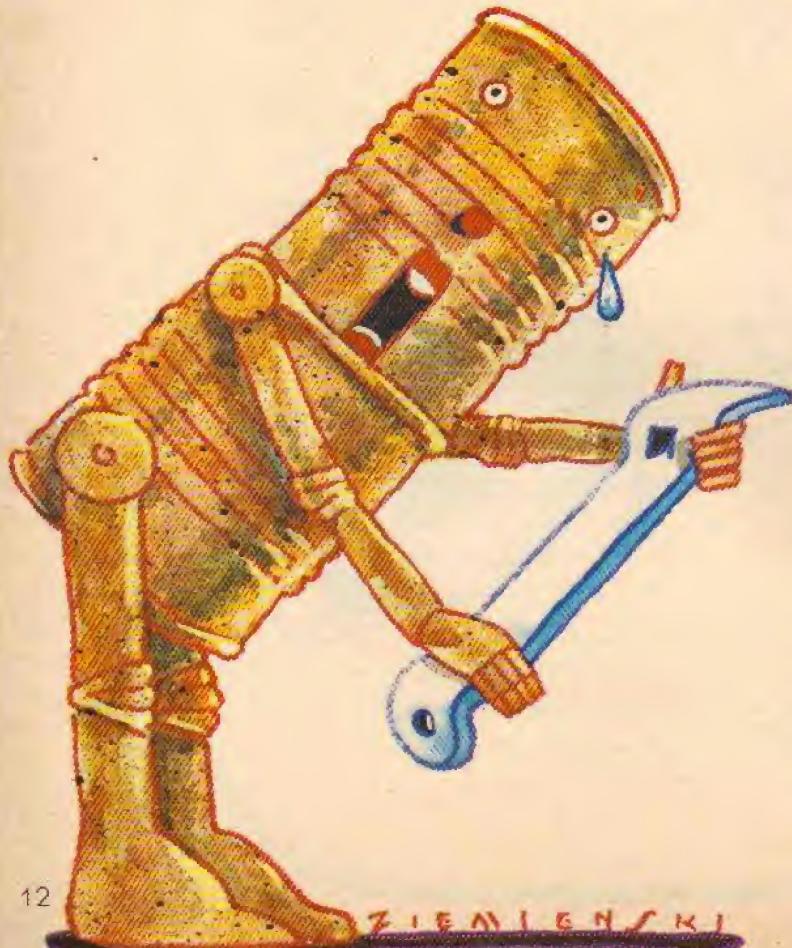
## How do radios get different stations?

**stations?** Your voice travels through the air on sound waves. Radio messages travel through the air on invisible waves, too. They're called—what else?—radio waves. Inside your radio is a receiver. It catches the radio waves coming from the station and turns them back into sound.

If your radio caught all the waves at the same time, you would hear dozens of radio stations all at once. The trick is to just pick up the radio waves you want. To do this, each station sends out waves that vibrate at different rates.

The number of times a radio wave vibrates is called *frequency* (FREE-queen-see). The numbers on your radio measure frequency. The higher the number, the more the waves are vibrating. When you turn the dial, you are setting your radio to catch one frequency at a time. In this way, you can tune in to your favorite station.

Question sent in by Senri Walford, Sun Prairie, WI.



**Why do cans rust?** Hold it! Not all cans rust. If you see a rusty can, there is some iron in it. Anything made with iron—such as cars and nails—might rust. When water or damp air comes in contact with iron, rust begins to form. But aluminum cans, from which most soda pop cans are made, contain no iron. So they never rust.

Before anything begins to rust, oxygen has to get into the act. It combines with the iron to form iron oxide. Then the iron oxide combines with the water. And yuck...you have a rusty nail or can.

What's bad about rust is that it eats away, or *corrodes*, the surface of whatever it forms on. That makes the metal weaken. Rust can cause nails to break off and holes to appear on cars.

But the reddish-brown substance isn't permanent. If you catch it before it becomes too thick, you can remove it. Just scrub it with some water or cleaning powder.

Question sent in by Danny Burgess, Flushing, NY.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?  
3-2-1 CONTACT  
P.O. Box 599  
Ridgefield, NJ 07657

## What's so good about gold?

Gold is not better or more useful than other metals. But compared to metals like silver or copper, there isn't much gold around. So people are willing to pay lots of money to get what little there is.

Actually, gold by itself isn't of much use for anything. It's too soft. To harden gold, so that things can be made from it, other metals must be added. Even fine jewelry made of 18-karat gold is only 75 percent pure. The rest is another metal—such as silver, copper, nickel or zinc.

All gold isn't used for decoration. Some is used in machines. For example, a thin coating of gold can carry electricity well. So, it's used for tiny electrical circuits inside some computers and TVs.

Still, because gold is beautiful and valuable, its most popular use is for jewelry. In fact, half of all the gold mined in the world ends up as rings, bracelets, watches and necklaces!

Question sent in by Mathew Todd Wilson, Anchorage, KY.

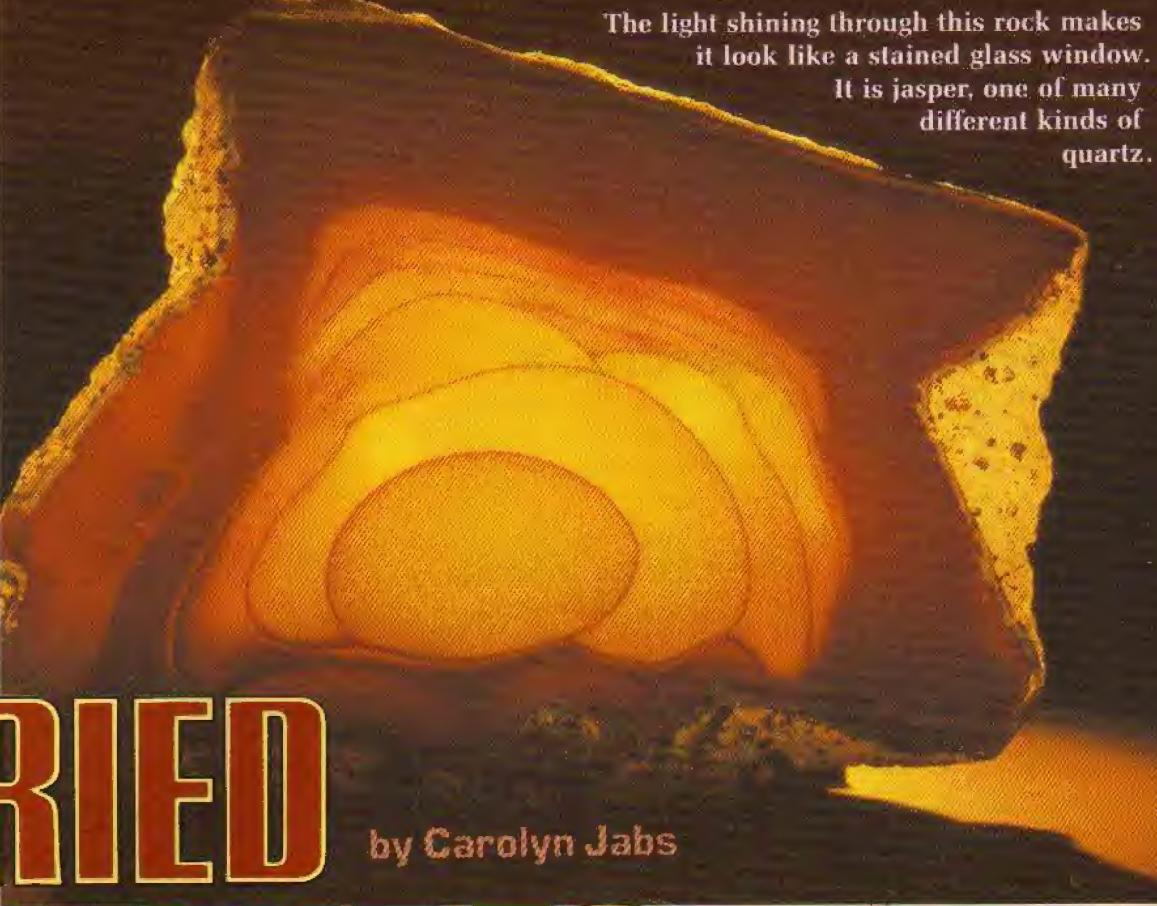


**What causes a mirage?** Sometimes when it's very hot, you might think you see a pool of water on the ground far away. The same thing can happen in the middle of a hot desert. But the water is not really there—it's just a mirage.

To understand how a mirage works, put a pencil in a glass of water. The pencil looks bent, but it's not. The light rays passing through the water are, however. When the bent light rays bounce off the pencil and into your eyes, the pencil looks crooked.

During a mirage, the pool of water you see is actually a bent reflection of the blue sky. If the ground is very hot, the air just above the ground is also very hot—hotter than the air higher up. Light rays coming down from the sky are bent by this change in temperature. If the light heads up toward your eyes, you see blue. You think the ground is covered with water. But better not drink the mirage.... All you'll get is a mouthful of sand!

Question sent in by David Fleck, Fort Wayne, IN.



The light shining through this rock makes it look like a stained glass window. It is jasper, one of many different kinds of quartz.

# BURIED TREASURES

by Carolyn Jabs

## LOOKING FOR ROCKS AND MINERALS

Winnifred Parker went out looking for pretty rocks one day in Murfreesboro, Arkansas. She was a rock collector or rockhound. What made this rockhunting trip special was what she found. Lying on the ground was a small, shiny stone. She picked up the rock and took it home. It turned out to be a big diamond! Mrs. Parker's find became known as the "Star of Arkansas."

Thousands of other rockhounds like Mrs. Parker make a hobby of collecting rocks. Have you ever walked along a beach and noticed a colorful rock lying in the sand? If you picked it up and put it in your pocket, you may be a rockhound, too.

Most rockhounds don't expect to find a diamond. They think more common rocks can be very interesting, too. Look closely at a few stones, and you'll see why. You will notice that they often have streaks of color or tiny specks. These tiny particles that make up rocks are called minerals. There are more than 2,500 different kinds of minerals. These include rare ones like gold and silver and common ones, like iron and quartz.

Minerals come in different colors. Every mineral forms crystals in its own special shape. Under ideal conditions, each mineral would make a well-formed crystal. Rockhounds are always looking for these crystals, but they're hard to find. In most rocks, several minerals are jammed together so that none of the crystals are perfect. Granite, for example, is a common rock. It is made from three minerals—mica, feldspar and quartz.

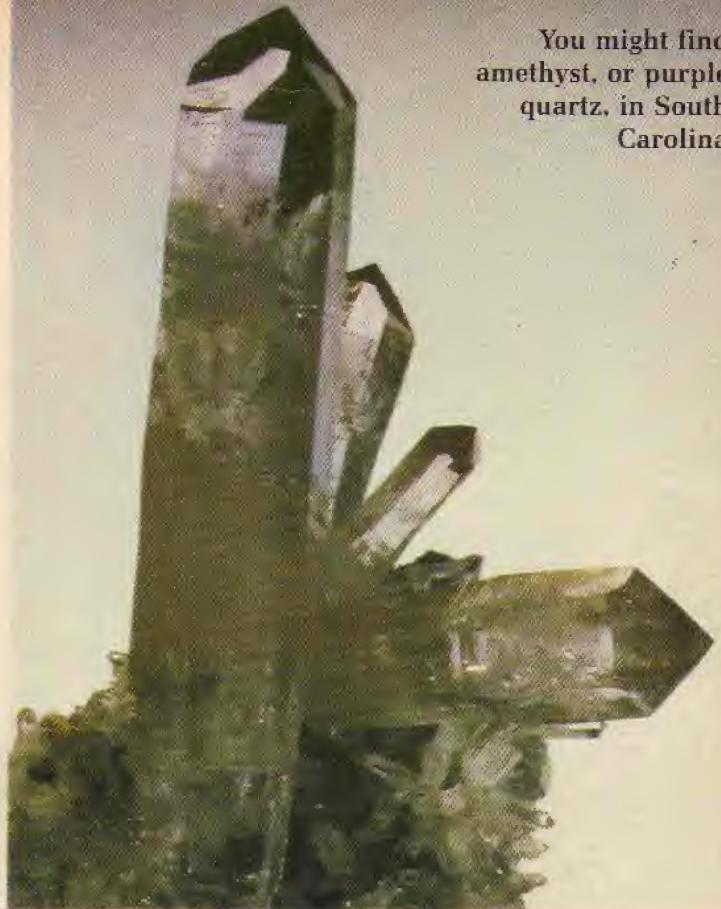
### Beautiful Rocks

A rock doesn't have to be as rare as a diamond to be beautiful. Quartz, for example, is a common mineral in the United States. Because it comes in many different lovely colors and shapes, rockhounds enjoy looking for it. What quartz looks like depends on where you are looking.

Agates (AG-ets) are a kind of red, brown or orange quartz. If you held an agate up to the sun, the light would shine through it like a stained glass window. Agates are found in many places. The ones on the beaches of Lake Superior in Wisconsin are especially nice.



**Above:** These quartz crystals glitter like diamonds. In fact, they're called Herkimer diamonds because they're found in Herkimer, New York.



You might find amethyst, or purple quartz, in South Carolina.

Rockhounds like to take home pretty rocks like this piece of rose quartz.



In New York, rockhounds hunt for a kind of quartz so clear that it glitters like diamonds. These rocks are called "Herkimer Diamonds." In South Carolina, rockhounds are very excited when they find deep purple quartz called amethyst. In Ohio, they search for a kind of quartz called flint. It was used by the Indians to make arrowheads. And in Montana, quartz shows up as moss agate. This clear stone has wavy green marks in it.

In Oregon, quartz shows up again. This time it's in Thunder Eggs. These rocks were formed long ago inside volcanoes. They are lumps about the size of a tennis ball. A lump of rock doesn't sound very exciting. But there's a surprise inside. Break open a Thunder Egg and you'll find a beautiful piece of quartz.

### Become a Rockhound

Looking for rocks can be a real adventure. No matter where you live, some kind of rock is just waiting to be collected. You don't need much equipment to be a rockhound. Just find the following things:

1. A strong bag or knapsack to hold your rocks.
2. Newspaper to wrap the rocks you pick up so that they don't get chipped or scratched.
3. A brush for cleaning off rocks you find. ➤



**Right:** Because it comes in a pale yellow color, this mineral is called smoky quartz.

**Below right:** Sometimes quartz crystals are found fused together at a special angle. This kind of quartz is known as 'Japan law twin.'

4. A magnifying glass for a closer look at your rocks.
5. A spray bottle of water, since many rocks look prettier when they are wet. This will help you decide which ones to keep.

### Where to Look

The great thing about rock hunting is that you can do it almost anywhere. You can look for fancy stones while you're traveling on vacation with your family. Or you can start in your own backyard or in the vacant lot down the street.

Streams and beaches are also good places to look. The water makes the rocks shine so they are easier to spot. Places where people are digging to build a new house or a road are often full of rocks. But you should get permission before looking in those spots.

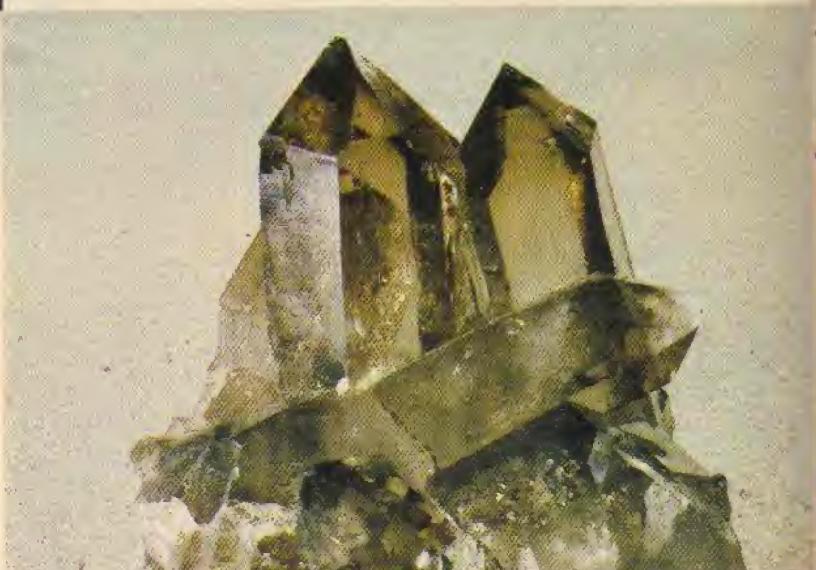
### Building Your Collection

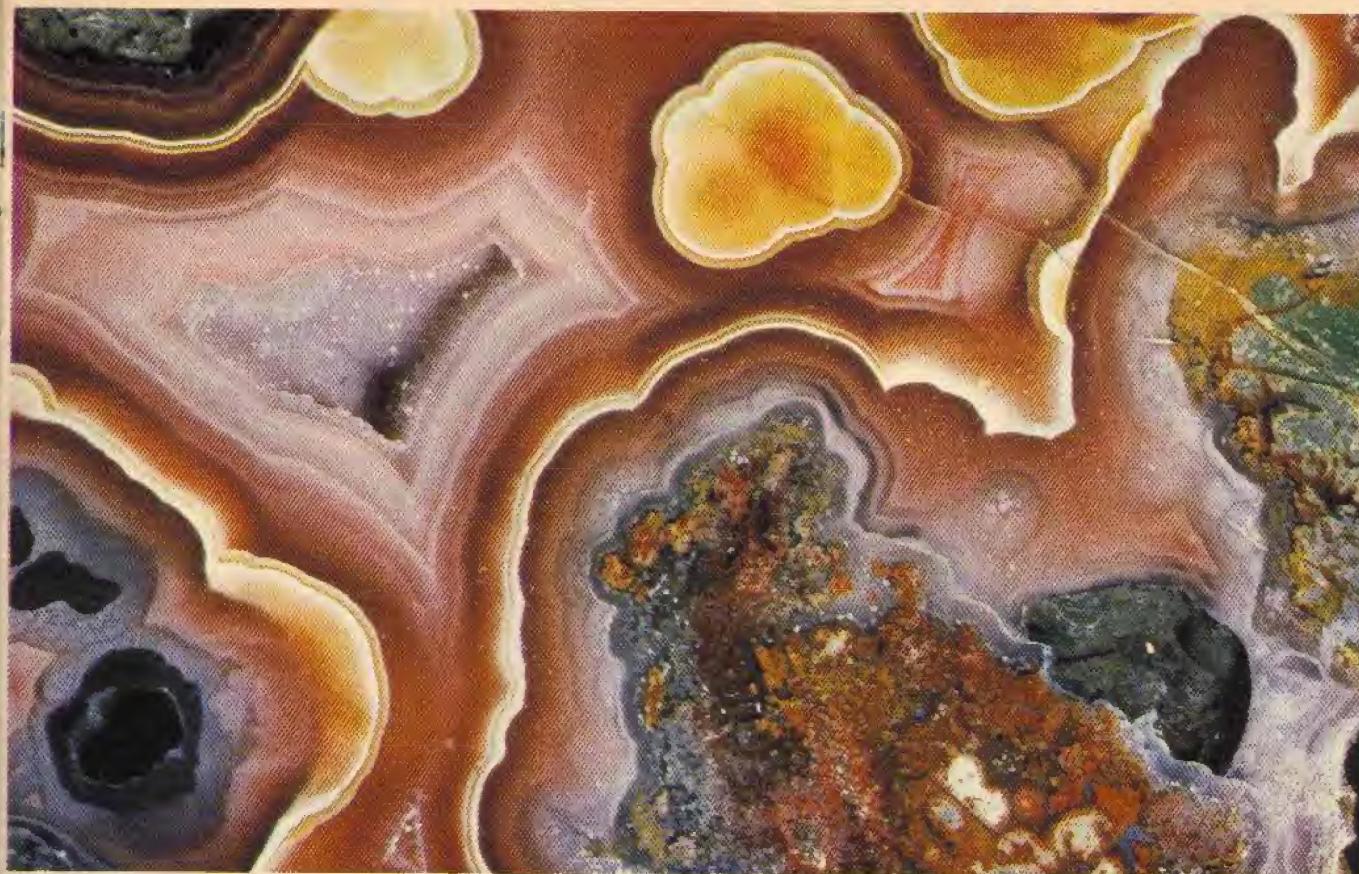
Finding rocks is just the first step for a rockhound. When you get your rocks home, you will want to figure out just what you have. A book on rock collecting with loads of pictures



**Above:** Sometimes you will see tiger eye quartz used to make rings, tie clips and other kinds of jewelry.

**Left:** Quartz crystals are often found mixed with other minerals.





will help you decide what rocks you've found.

Look carefully at the markings of the rocks you find. Some rocks have stripes on them. Others have flecks or specks of a different color. Still others have lines or marks that seem to make a picture. Many rockhounds collect rocks just so they can look at the designs on them. Looking carefully at the patterns will also help you identify the rock.

Another way to identify a rock is by its hardness. That may sound silly. But not all rocks are hard. A scientist named Mohs figured out a hardness scale from 1 to 10. Rocks which get a 1 for hardness are as soft as the talc which is used to make baby powder. Rocks which get a 10 are as hard as diamond. This mineral is so hard that chips of it are used on saws to cut other rocks.

To figure out the hardness of your rock, try these tests. Can you scratch the rock with your fingernail? If so, its hardness is around 2. If your fingernail doesn't work, can you scratch it with a penny? Then the hardness is around 3. Next try using the rock to scratch a piece of glass. If the rock scratches the glass, its hardness is about 5.

Your book may suggest other tests that will help you identify your rocks. When you think you know the kind of rock you have, write the name on a card with the place where you found

**Above:** This quartz, with the interesting patterns is found in Mexico. It is called an agate. You might find other kinds of agates in Oregon or Wisconsin.

the rock. Then you can display your collection on a shelf. Some rockhounds like to store their rocks in a glass jar so they can see them next to each other. If you fill the jar with water, it will make the colors in the rocks look brighter.

### **Summer Specials**

Rock collecting is a hobby that you can enjoy all year around. But now while you're on summer vacation, you may have a special chance to find some new rocks. Going on a trip? Then ask your family to stop at a cave or beach where the rocks are particularly exciting. Or you could visit a museum to get new ideas for your collection. If you're visiting relatives or friends, ask them about the best local spots to find rocks.

And if you happen to be heading for Arkansas, you might look for diamonds. Mrs. Parker found hers at the "Crater of Diamonds" near Murfreesboro. It is now a state park where people find small diamonds from time to time. For a small entrance fee, you can spend the whole day poking around. Who knows? Maybe you'll be the next rockhound to find a diamond.

# Contact Report

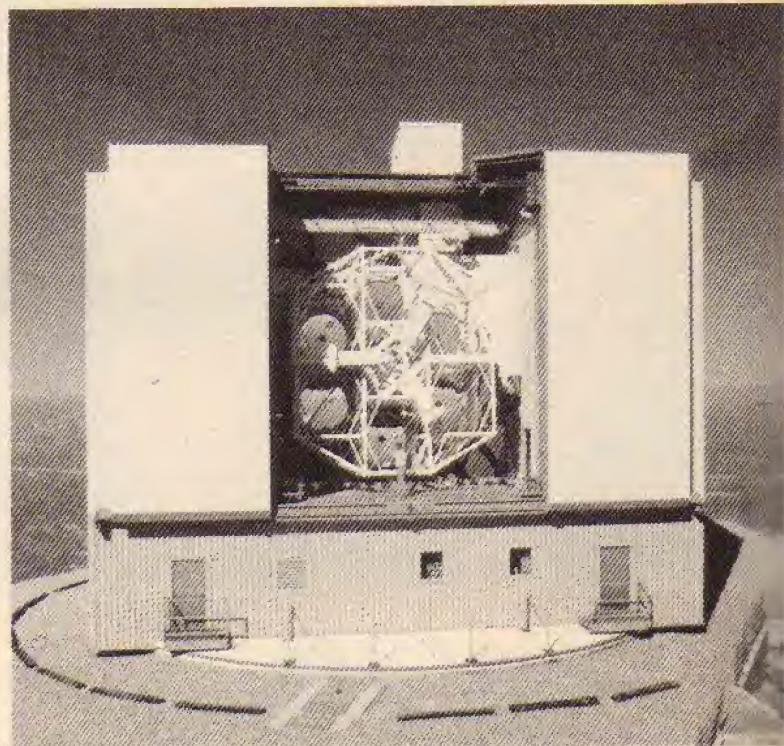
**Terrific Telescope** What will the telescope of the future look like? The answer may be sitting on a mountaintop in Arizona. A mile and a half (2.4 km) above the Sonoran Desert is the Multiple Mirror Telescope or MMT.

The MMT is built into a five-story building that spins in order to help viewing. The telescope has six eyes and a computer brain.

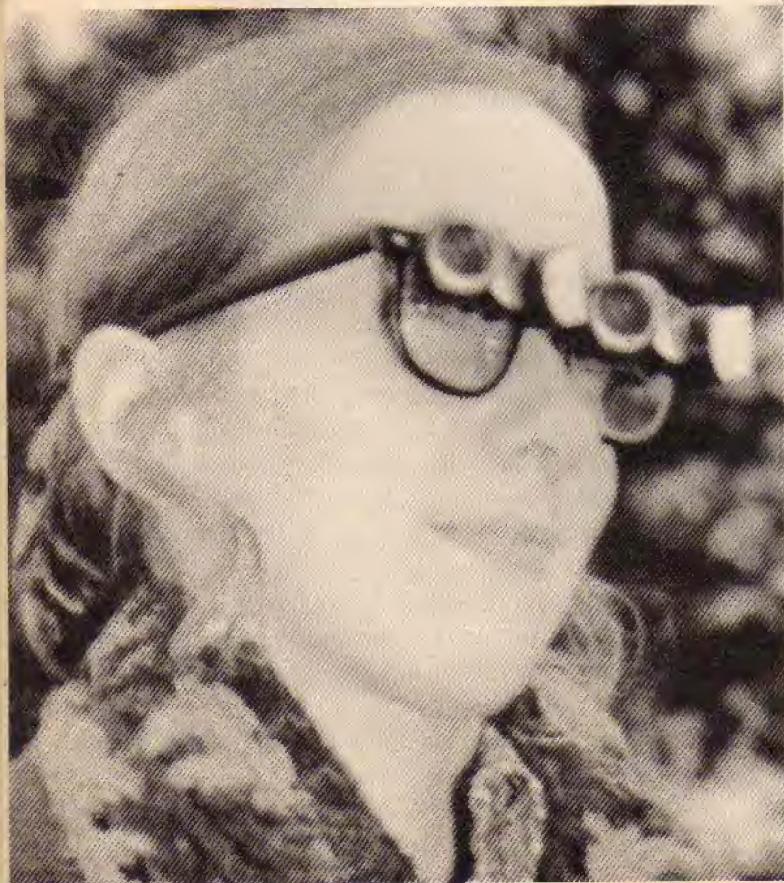
For years people have been building bigger telescopes to see farther into outer space. Finally, it seemed telescopes could get no larger. If they had, their big, heavy mirrors would have collapsed under their own weight.

Although the MMT is very powerful, it doesn't have a big mirror. Instead, it has six medium size telescope mirrors which are linked up by a computer. Astronomers have already used the MMT to discover a new type of hot, pulsing star. They hope for many more far-out discoveries in the future.

—Written by Joanna Foley



Telescopes of the future may look like this one.



18 Honey Bee glasses help some people to see better.

**See Like a Bee** There are brand new eyeglasses, called Honey Bees, and people are buzzing over them. These glasses are specially designed to help people who are nearly blind to see better than ever before.

Honey Bees were invented by Dr. William Feinblom. He used real honeybees as his model. "The honeybee has a wider field of vision than a human being," says the doctor. "It has a lot of little eyes, each pointing in a different direction." So Feinblom's glasses have three lenses for each eye. One lens points straight forward. The other two point to each side.

This invention works better than other glasses for the near blind. They help people see things that are at their sides, rather than just the objects that are straight ahead.

These glasses aren't widely available yet. And they're expensive. Because they must be specially fitted to each wearer's eyes, they cost \$3,000 to \$6,000. But for some people, Honey Bees are a sweet deal.

—Written by Joanna Foley

# Contact Report

**Harvest of Horns** In California, Boy Scouts sell cookies to raise money. In Jackson Hole, Wyoming, they sell elk antlers! Lots of people there buy the handsome antlers to hang on their walls.

About 250 boys go out on a big antler hunt. They pile into trucks and head for the National Elk Refuge. There, land has been set aside as a home for these animals.

On the ground, there are plenty of antlers lying around for the boys to pick up. These big horns come from the 800-pound (360 kg) male elks. The animals grow them in the fall and shed them in the spring. Later on, each male elk will grow another set of horns.

The scouts sometimes gather as many as 8,000 pounds (3,600 kg) of antlers in one hunt. Some of the money they raise goes to do a good deed for the elks. It is used to buy food for the animals to eat during the next cold Wyoming winter.

—Written by Jane Scherer



These boys sell elk antlers to make money.



A little fossil is making big news.

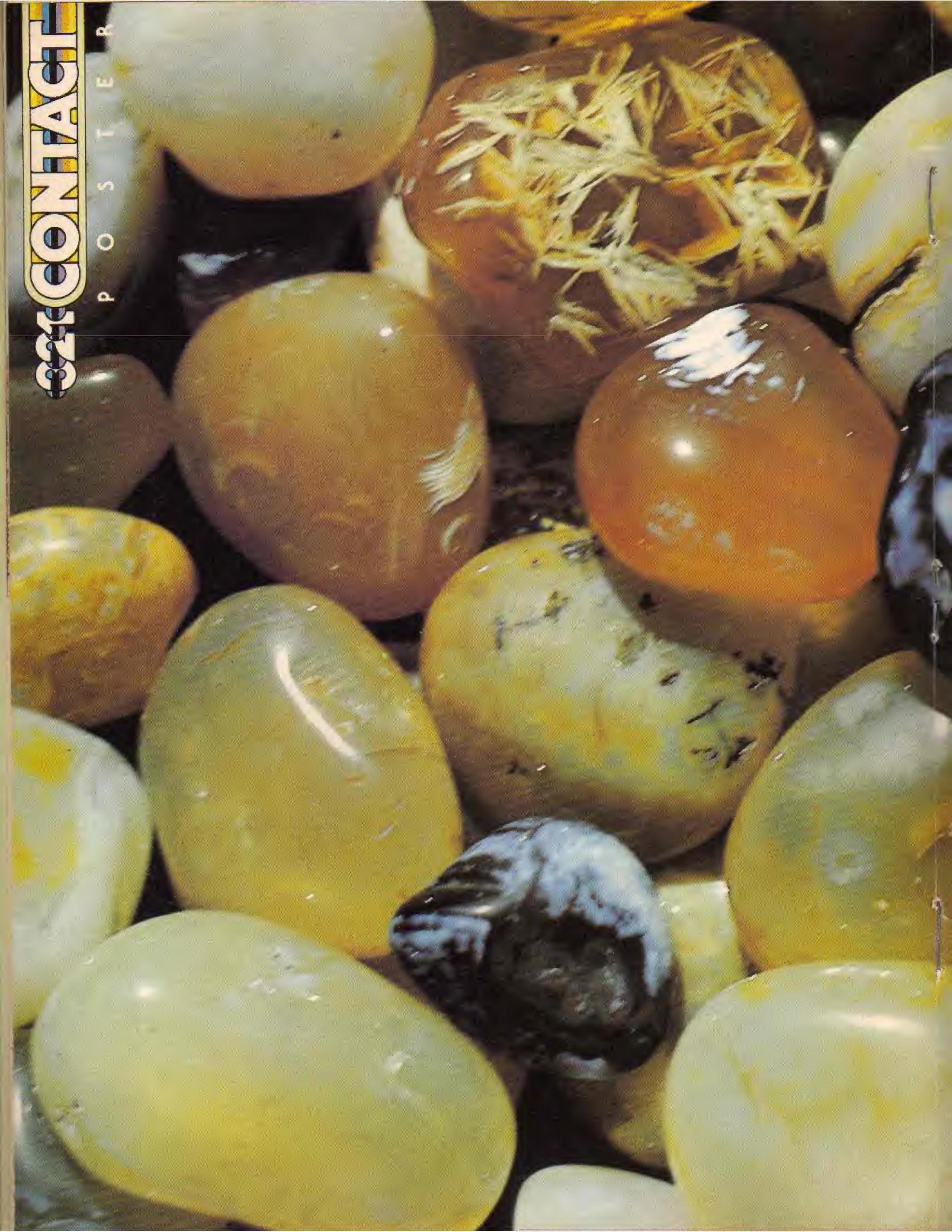
**What's That?** Did you read about some kid who invented an electric nosewarmer? Or one who set some new science record? Then cut out the newspaper or magazine story and send it to us. If we use your story, we'll send you a CONTACT T-shirt. Be sure to include your name, age, address and T-shirt size. You must include the name of the newspaper or magazine. Write to:

**Fossil Find** A tiny fossil about one-half inch (1.2 cm) long is making big news. It seems to be the jawbone of a mammal no bigger than a mouse. Scientist Farish Jenkins believes that the animal lived 180 million years ago. That makes this one of the oldest mammal fossils ever found.

Other researchers helped Jenkins dig up the tiny bone last summer in Arizona. They had spent four years there, sifting through tons of rocks and dirt. And small as the fossil is, it's important. It proves that there were at least three kinds of early mammals. Up to now, only two had been found.

—Written by Suzanne Martinucci

**The Contact Report**  
P.O. Box 599  
Ridgefield, NJ 07657



# ROCKS!

Beauties like  
these are found  
on many  
beaches.



# SUPER BIKE

Pretend for a moment that you're going for a ride in a vehicle of the future. Parked outside your house is a sleek, rocket-shaped invention with three wheels. The clear plastic roof lifts up when you press the handle. You slide inside and settle into the cockpit. After closing the top, you slip your feet into the pedals. You pull away from the curb and begin shifting gears.

Right away you notice that this small vehicle is comfortable and quiet. It makes no noise because it has no motor. But the instrument panel shows you're doing nearly 50 miles (80 km) an hour. Your pedaling is supplying the energy to make it go. You're amazed because you're not even working hard. And since it isn't running on gasoline, it doesn't pollute the air.

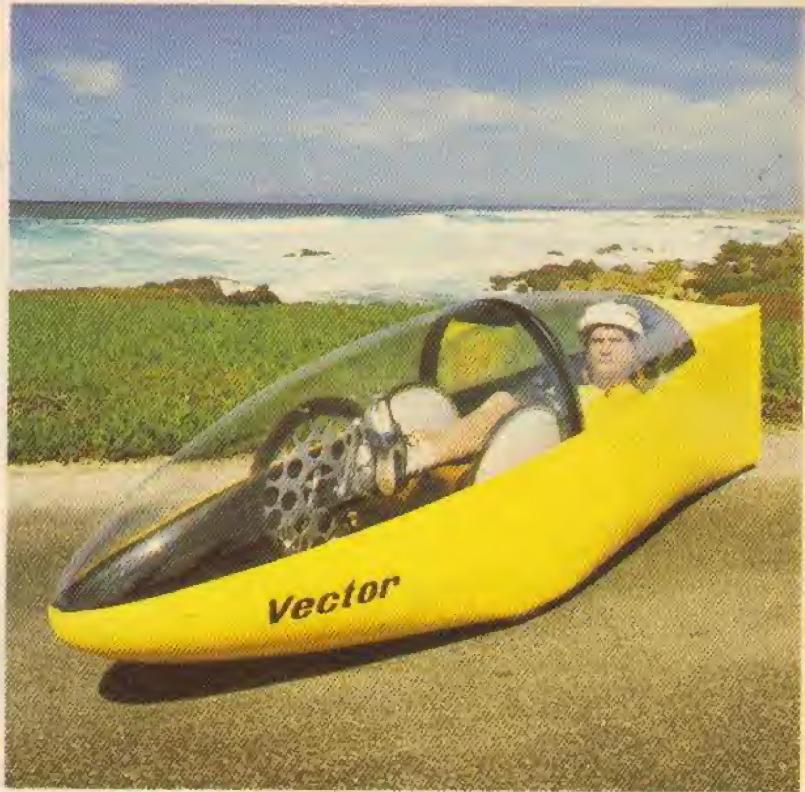
This must sound like a wonderful new inven-

tion. But something related to it is probably sitting in your garage right now. It is a plain old bicycle. And, believe it or not, the vehicle of the future is a bicycle, too!

## Building Super Bikes

This super bike is called the Vector. But if you're getting ready to order one from a bike shop, hold on a minute. Only a few bikes like this have been made so far. The Vector is still being tested and improved by inventors and engineers. What they're trying to do is build new bicycles that are safer and much faster than today's best models.

In the future, they hope these new bikes could replace cars—at least for short-distance traveling. Super bikes could be very useful when gasoline is expensive and in short supply. ➤



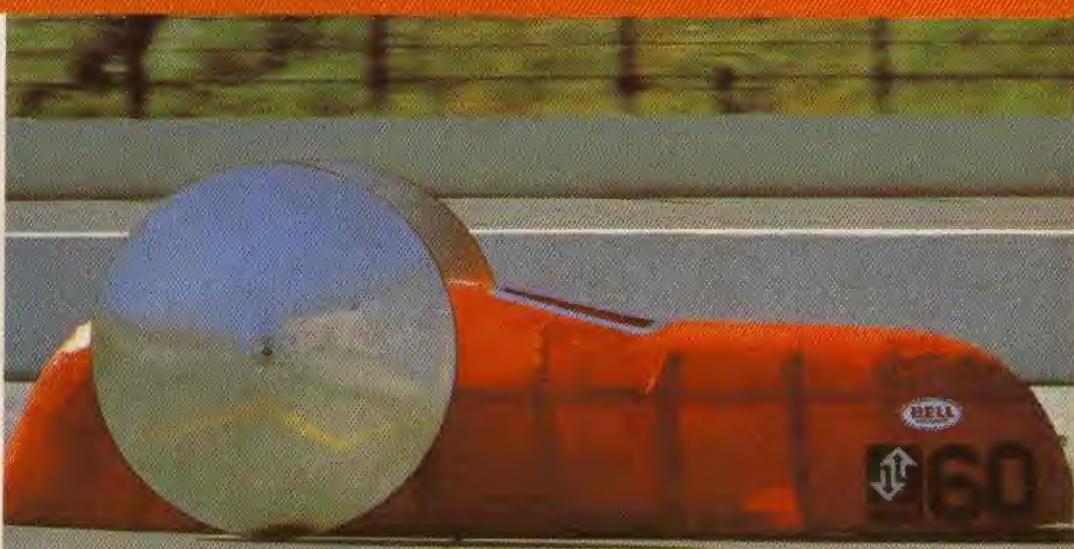
**Above:** Many new bikes like this Vector are covered with plastic shells to help them glide through the air.

**Left:** With two riders to pedal this new super bike, it can go as fast as 62 miles an hour.

7/86

## CYCLING INTO THE FUTURE

by Douglas Colligan



Not all the new bikes are super fast. The red one here goes only about 20 miles an hour.

**Right:** This is the first bike to break the 55 mile an hour speed limit. It got an honorary speeding ticket.

Al Voigt is an engineer who is developing the Vector. It is hard work because the basic design of the bike isn't easy to improve. Bikes are so good that they have stayed much the same for over 100 years. They all have wheels, brakes, pedals and gears.

But for the Vector, the basic bike parts are put together in a new way. The inside looks like a backward tricycle. There are two wheels in front and one in back. Because the rider sits back in a small chair, pedaling takes less effort. To steer, you move a small handle from side to side.

The most important thing about a Vector, however, is the rocket-shaped shell that covers the whole bike. It helps to solve a problem that comes with all high speed biking—



Since it has three wheels, this vehicle is really a streamlined tricycle.





**Above:** Would you like to pedal a bike while lying face down like this rider?

wind resistance. You feel the wind pushing against you when you zoom along on your bike. The drag of the air slows you down. On today's bikes, wind resistance keeps the rider from going any faster than 30 miles (48 km) an hour.

But Vector bikes don't have this problem. Their plastic tops and sleek shapes help them to glide through the air. And to reduce wind drag still more, Vectors are built close to the ground. These features make them very speedy. One Vector hit 58 miles (93 km) an hour a couple of years ago in a race against other new super bikes.

Vectors will go even faster in the future, according to Al Voigt. Already, a special two-seater

model has been taken out for a test run on a California highway. With two people pedaling, it easily reached 60 miles (96 km) an hour.

### Landing on Your Feet

There's another kind of new super bike that is already available in limited numbers. The Avatar 2000 is built for improved safety, not faster speed. A few years ago college professor David Wilson noticed that too many people were getting hurt on bikes. In accidents, they often were thrown over the tops of their handlebars and got serious head injuries. Biking might be safer, Wilson thought, if a rider were closer to the ground. He also wanted to get rid of the handlebars.

The professor designed a new bike he calls the recumbent (re-COME-bent) bicycle. That word means lying down. Instead of sitting on a regular ➤

Some new bikes look a little like rocket ships.



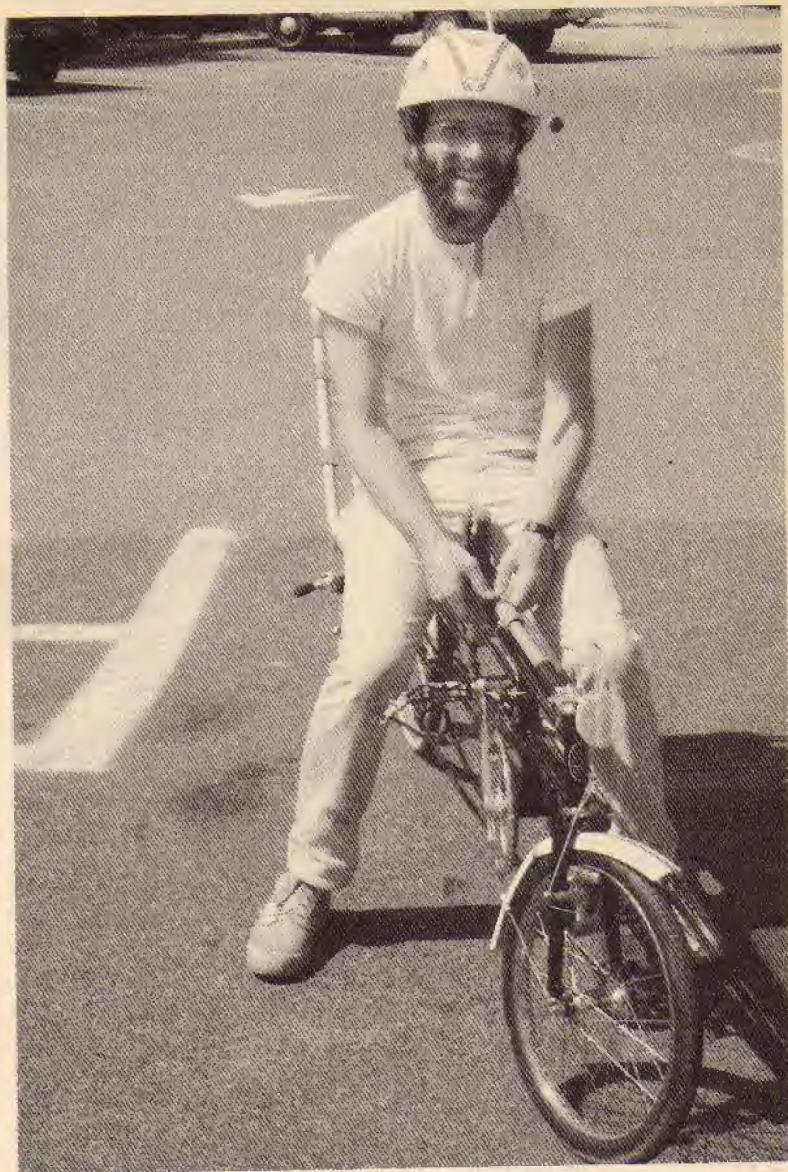
seat, the rider leans back in what looks like a small easy chair. The rider pedals with her legs straight out in front. She steers with a small cross bar under the seat. This bike has a large wheel in back and a smaller one in front.

The recumbent bike is safer than today's ordinary bicycles. If a rider hits something or makes a sudden stop, she usually lands on her feet, not her head. Wilson also says that once you get used to the laid-back biking, you can go a little faster on his two-wheeler than on a regular bicycle.

Recently, a Massachusetts company began selling copies of David Wilson's bicycle. They cost close to what a person might pay for a used car. But at least one buyer doesn't care about the high price. Now that he has an Avatar, he says he doesn't need a car. He only stops at the gas station to put air in his tires.

The Avatar and the Vector aren't the only super bikes in sight. Engineers already are designing more new models. There are some bikes that you pedal while lying face down. And there are even bikes with bullet-shaped cocoons around their wheels to help them go faster. Just think. Someday you may own one of these super bikes. When you go for a ride on it, you'll have to be careful. After all, you don't want to get a speeding ticket!

**Right:** The Avatar bike is built to be safer than today's models. If a rider has an accident, he is more likely to land on his feet than on his head.



To ride an Avatar bike  
you sit way back. You also  
steer with one small straight bar  
instead of the usual handlebars.



# The Bloodhound Gang



## The Case of the Flaming Feather

### Part One

Vikki, Ricardo and Zack, otherwise known as the Bloodhound Gang, were staying with Vikki's aunt Monica for the weekend. They had arrived in the city about an hour ago, and now they were in the midst of eating dinner.

"Ummm," Monica said between mouthfuls of the much praised chili she had made. "I forgot to tell you—there's a tenants' meeting that I have to attend this evening. You're all welcome to come along. In fact, you might find it interesting."

"How so?" asked Zack.

"It's about The Flaming Feather, a discotheque right next door to our apartment building," Monica explained. "We've been trying to close it down or at least get the owner to take some steps to lower the amount of noise. The music keeps us awake until all hours of the morning, and the street is always overflowing with people waiting to get in."

"Have you had any luck with the owner so far?" said Vikki.

"No," replied Monica. "Up until now he

by Madeline Sunshine

wouldn't even talk to us. But something must have changed his mind because he's the one who actually called tonight's meeting."

"Did he say why?" Ricardo asked.

"Nope. We haven't a clue," said Monica.

The three young detectives helped Vikki's aunt clear the table and wash the dishes. Then they all headed down to Linda Waring's apartment, where the meeting was being held. By the time they walked in, all of the other tenant representatives were seated. The only one who hadn't arrived yet was Adam Silver, owner of The Flaming Feather.

"Maybe he won't show up," said Linda.

"He'll be here," said Lois, the most vocal and the most anti-Flaming Feather member of the group. "There's no way he's going to miss this meeting."

"How can you be so certain?" asked a tenant named Bruce. "He's never responded to us before."

"Ah, but he asked for this little get-together," Lois said, her voice giving away her dislike for ➤

the discotheque owner. "And that tells me that something we've done must have gotten to him."

"What does she mean?" Vikki asked Monica. "What have you guys been doing?"

"Oh, the usual," said Monica. "Petitions, phone calls; we even picketed the place one night."

## The Landlord Arrives

Just as Monica finished speaking the doorbell rang, and in walked Adam Silver, his face flushed with anger, an envelope in his hand.

"I think we can skip the phony formalities," he said, pulling a paper out of the envelope. "I'm sure one or all of you know why I'm here."

"Not exactly," said Lois, a nasty edge to her voice. "Why don't you tell us?"

The man held up the paper. "It's a little question of threats," he told the group. "For those of you who can't see from where you're sitting, I'll be glad to pass this piece of garbage around."

"Wait!" Ricardo called out. "If it's really a threatening letter, it should be checked for fingerprints before anyone handles it."

"It doesn't matter anymore, kid," the man replied. "First off, almost everyone who works for me has read it. And second, I have no intentions of bringing in the police. I'm perfectly capable of taking care of my own problems."

Ricardo shrugged as the man began to pass the letter around. Whoever had sent it had cut out letters and phrases from magazines and had pasted them onto the paper to form a message.

"This is a warning," it read. "Close up today, before it's too late; before you, your club and your patrons really get burned!"

A hush fell over the room as each person looked at the letter. Then Adam Silver turned to Lois.

"You're the one I suspect, lady," he said. "You're the one who's been calling and annoying my wife and children. And you're the one who sent those fire inspectors around last month."

"I had nothing to do with this," Lois said, obviously shaken. "I'm not a criminal. I'd never hurt anybody."

"Well, see that you don't," the man replied. "I closed up yesterday, when I first received the letter. I was afraid to take a chance. But I'm a businessman, and I can't shut down forever. I'm expecting a full house tonight for this masquerade ball. I've been planning this party for months. And

you're all on notice," he said. "If anything happens to my club or my guests, it's you people who'll burn; and that's a promise, not just a threat!" With that, he stormed out, slamming the door behind him.

## Is Lois Guilty?

For a moment, there was total silence. Then everyone's eyes automatically focused on Lois.

"I didn't do it," she said softly. "I'd never do a thing like that. There are young people in that discotheque. I have children of my own. Please, believe me!"

"We do," said Monica, and suddenly the tension in the room eased.

"You know," Zack said thoughtfully. "It's very possible that Silver put that note together himself. For example, if he's been having financial problems, maybe he's planning to vandalize the place so he can collect insurance money."

"That could be," Ricardo chimed in. "Especially if the disco's heavily insured."

The members of the tenants' committee gave the three detectives a puzzled look.

"Oh, excuse me," Monica said. "Meet my guests, Vikki, Ricardo and Zack, otherwise known as the Bloodhound Gang."

"The famous Bloodhound Gang?" Linda asked.

"The same," Monica said proudly.

"Boy, I heard you people are there on the double whenever there's trouble," said Bruce, "but this time, you even showed up in advance!"

Everyone laughed despite their concern. Then Ricardo said, "We'll be glad to help out however we can."

"Yes," Vikki agreed. "In fact, I was just thinking that we could all work together on this case. Now, we three are too young to get into the Flaming Feather, so we could keep watch for trouble outside."

"Right," said Zack. "And here's where the rest of you come in. Since it's a masquerade ball, maybe some of you could get into costume and observe the action on the inside."

"Hold on!" said Lois. "Why should we help Silver? He's never done anything for us!"

"But look at it this way," Vikki said. "If something should happen tonight, you'll all be in the clear. Our being together will prove that none of you is involved."

## A Plan of Action

"Let's do it," Monica said, after she mulled over the plan for a moment. "Who knows? If Silver isn't behind all this, and he sees that we're helping him, maybe he'll cooperate with us in return."

The tenants' group murmured and nodded their approval and, within the hour, the Bloodhound Gang's plan was put into action.

Lois, Bruce and Linda, in disguise, would enter the disco as customers. Zack and Vikki would keep watch at the front of the building, while Ricardo and Monica covered the side entrance. Bruce's son had volunteered his walkie-talkie so that the outside patrol could keep in touch.

The hours passed slowly. Costumed people walked down the street in all manner of dress. There were cowboys, ghosts, monsters, muppets and at least three Darth Vaders at last count.

Meanwhile, Ricardo and Monica had positioned themselves in the alley that housed the side door to the discotheque.

"What kind of trouble are we looking for?" Monica asked. "Have you any idea?"

"Well, the threat did use the word burn," Ricardo replied. Then he had a thought. "Didn't Silver say Lois had called fire inspectors in to check out the Flaming Feather?"

"Yes," said Monica. "But the club meets all the fire department's safety standards. There's an automatic sprinkler system inside. The system is made up of discs which are located in the ceiling. The heat of a fire will melt the discs and set the sprinkler system off."

"Is there an interior fire alarm system, too?" Ricardo asked.

"Yes, though it doesn't go off automatically," Monica answered. "Someone inside has to pull it. Once it's pulled, it rings both in the club and at a privately-owned alarm company. The company responds by calling the city fire dispatcher."

"How many emergency exits are there?"

"Two," Monica replied. "which is required for a place that accommodates 75 people or more. There's the one over there," she said, pointing to a door that had a car parked in front of it. "And there's one on the other side of the building."

## An Illegally Parked Car

"Isn't it illegal to park a car in front of a fire

exit?" Ricardo wanted to know.

"Yes," Monica agreed. "This one belongs to the bartender inside. He only leaves it here when he can't find a parking spot, and he comes out to check on it all the time."

"Are both emergency doors chained shut?" Ricardo questioned.

"No. They open from inside and out. Mr. Silver has bouncers stationed at each one to keep people from sneaking in."

"Well, it looks like the guy has everything covered," Ricardo said with relief.

Satisfied, he turned to admire the fancy sports car that sat in front of the emergency exit. As he did, Ricardo heard pounding on the door.

"Help! Help!" came the shouts from inside, as the pounding continued. "The door is blocked. We can't get out. Help!"

Quickly, he and Monica ran over to the car and began trying to push it out of the way. But it was no use. The car was locked, and its emergency brake was on. It wouldn't budge an inch.

The banging and screams for help continued. Frightened, Ricardo turned on the walkie-talkie. "Zack? Vikki? What's going on?" he shouted.

"Fire!" Zack cried, panic ringing in his voice. "The flames are shooting out all over the place. Do what you can back there. I'll go sound the alarm!"

## Will the Bloodhound Gang be able to rescue the costumed customers from the Flaming Feather?

To find out, read part two of "The Case of the Flaming Feather" in next month's issue of 3-2-1 CONTACT.



# Throat

by Megan Stine and H. William Stine

Just think. Without your throat you couldn't eat, talk, sing, swallow, breathe or wear turtleneck sweaters. And you know you would be lost without your turtleneck sweaters. So it's time to find out more about a few of the important things your throat does. Some of what you read may be a little hard to swallow, but it's all true. Honest!

## Give Your Throat a Hand

Clear the decks for action and clear your throats as well. It's time to "meet your throat." Maybe you take your throat for granted, but you won't after you try these three simple activities.

First put your hand on your throat. (Not too tight or you'll miss the next two activities!) Now hum your favorite song. You should feel your throat vibrate slightly. These vibrations are from your voicebox or larynx (LAR-inks). It contains your vocal cords. You'll be hearing more from them a little later.

For your second activity, take a bite of some food and swallow. This time your hand feels your throat

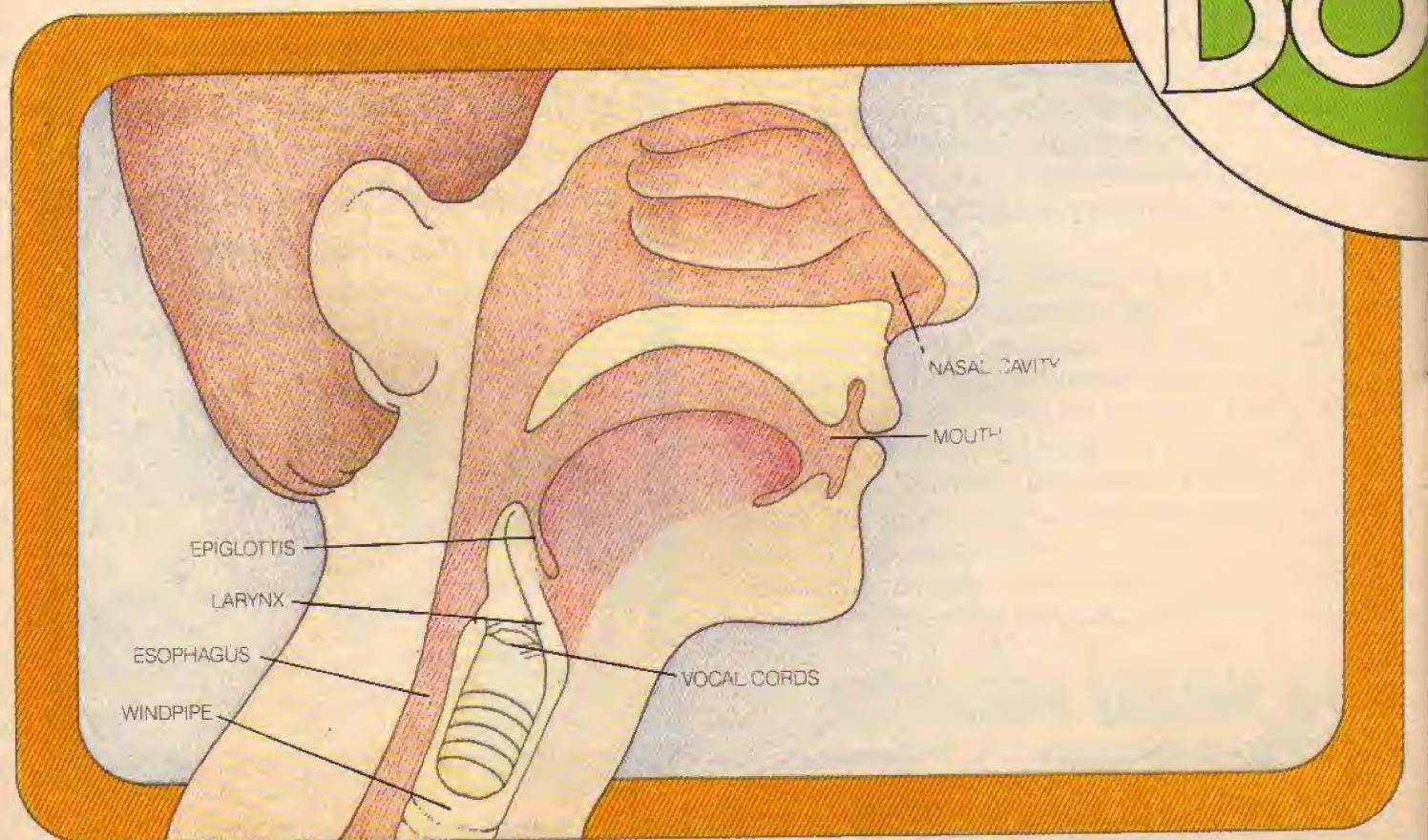
muscles squeezing. They are pushing the food down a tube called the esophagus (e-SAH-fa-gus). This tube leads from your mouth to your stomach. And it never cares how many chocolate cookies you send down—though your stomach might!

Finally, put your hand on your neck and cough. You should feel a blast of air rushing up your windpipe. This tube connects your nose and mouth to your lungs. By the way, the passages from your nose lead to the top of your throat. That's why, if you laugh while you are drinking chocolate milk, some of it may go right up your nose. Yuck!

## Say AHHHHHH!

If you still have them, you can also see your tonsils. Open wide and take a look in the mirror. Look past your tongue, down into your throat. You should see a spongy blob on each side. Those are your two main tonsils! Did you know that your tonsils are their biggest when you are nine years old? After that, they shrink and slowly disappear. (Unless a doctor takes them out, in which case they disappear very quickly!)

**BUSY  
BO**



## Gulp!

Over the teeth, past the gums  
Look out stomach, here it comes!

That isn't everything you need to know about swallowing. Did you know that a special "door" closes over your windpipe when you swallow? It's called the epiglottis (ep-i-GLAHT-is). This little flap keeps the food you eat from dropping into your lungs by mistake.

Normally the epiglottis "stands up" leaving your windpipe open so you can breathe. When you swallow, all your throat muscles work together to force the food downward. And at the same time, those muscles close the epiglottis flat over your windpipe so nothing can fall in. But if you talk or giggle or breathe in the middle of a swallow, you might just relax those muscles. If you do, the epiglottis will open, sending your food down the wrong pipe.

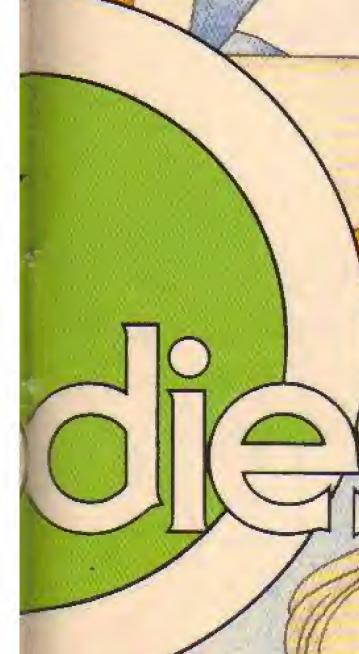
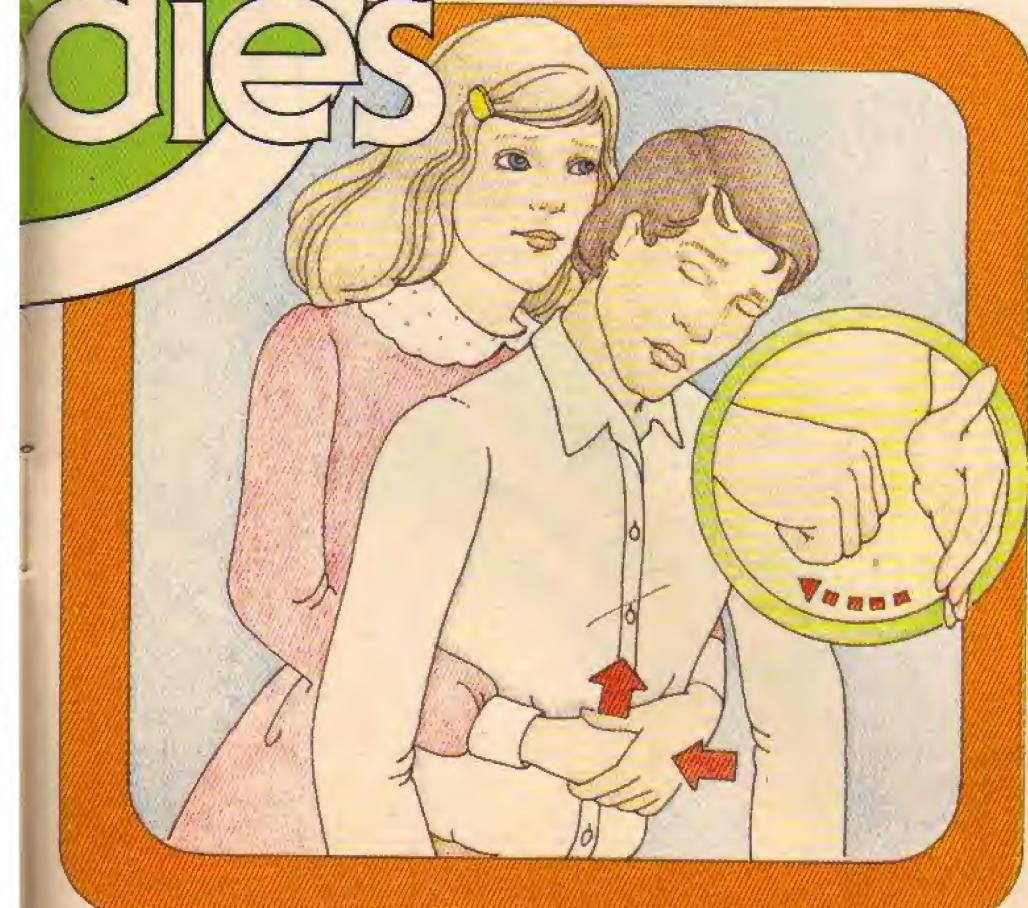
## Don't Choke!

When tiny amounts of food or drink do go down your windpipe, it hurts but you can usually cough it up. But if something larger gets stuck there, you wouldn't be able to breathe. That's when to take action.

Strike the choking person on the back a few times. Hit him sharply between the shoulder blades with the heel of your hand. If this doesn't work, a terrific new technique could save a life. It's called the Heimlich Maneuver and it's simple to do.

Just stand behind the choking person and put your arms around his waist. Grab your right wrist with your left hand and put it above the person's navel and just below the ribs. Then sharply and quickly press in. If you do it right, you'll send a blast of air from the person's lungs up the windpipe. The stuck piece of food will come flying out!

# dies



## Good Vibrations

Next time someone asks if you play a musical instrument, say yes. Then open your mouth and start singing. After all, the way your larynx makes sounds is similar to the way a musical instrument works.

Take a guitar, for example. It has strings that vibrate. It also has a hollow wooden box that makes the noise from the strings sound better. Your two vocal cords are made of stretchable tissue. They are your guitar strings. And your mouth, believe it or not, is your wooden box.

When you talk, air passes over your vocal cords and makes them vibrate. The sound waves travel to your throat and mouth, where your lips, teeth and tongue shape them into words.

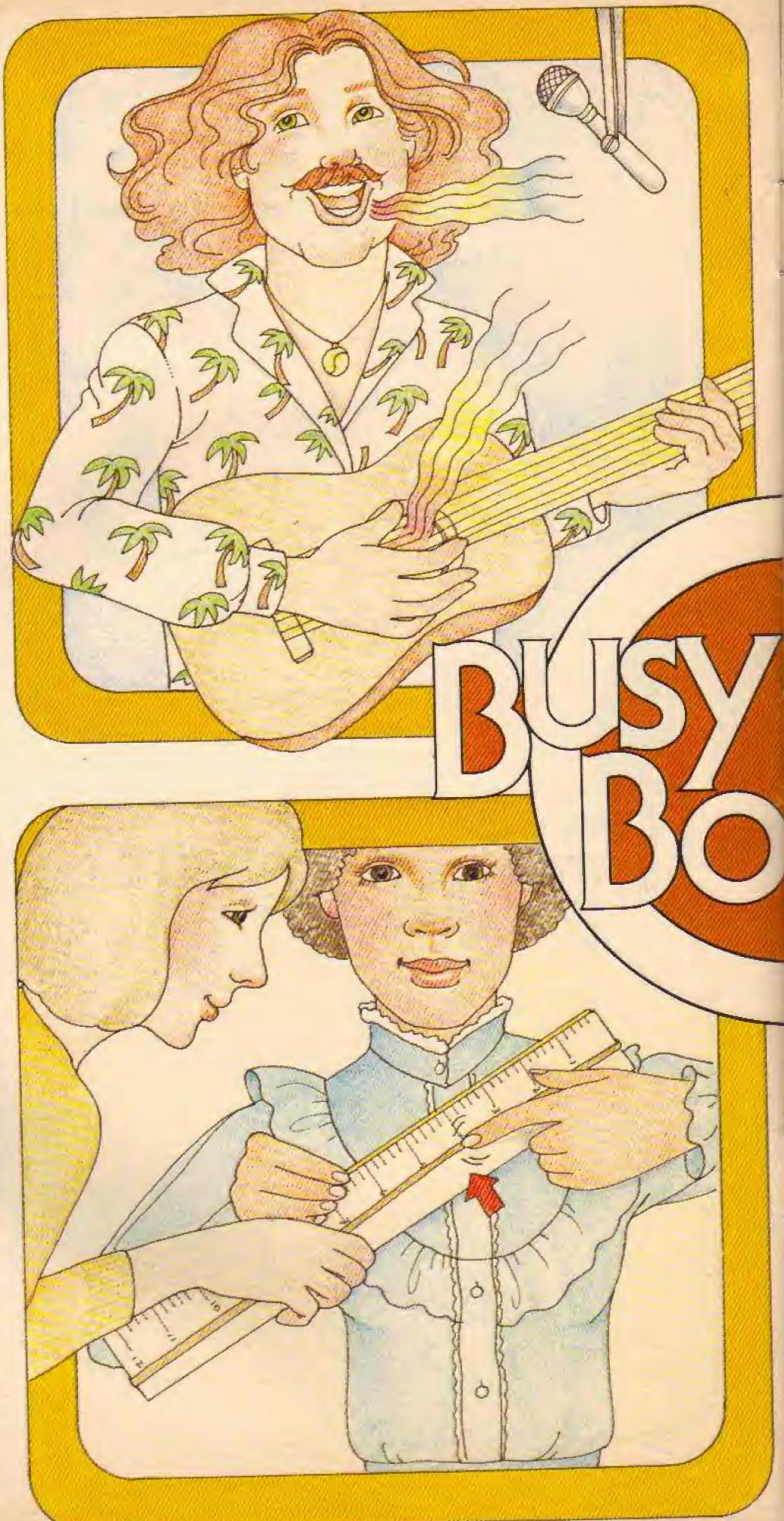
As a kid, your vocal cords are shorter and thinner, so your voice is higher and squeakier. As you grow, your vocal cords get bigger, too. So your voice gets deeper. To see this for yourself, try the following experiment.

## Talking Rubber Bands

Looking for something to do with a rubber band that doesn't involve making a spitball? Good. Rubber bands are a little like your vocal cords. Use one to find out why grown-ups usually have lower voices than kids.

Take a large rubber band and stretch it around a ruler. Pluck the band and listen to the sound. Now press the band against the ruler at the six-inch mark. With your other hand, pluck the rubber band. Try pressing the rubber band at other spots and see what that does to the sound.

As the amount of rubber band that vibrates gets smaller, the sound gets higher. Your vocal cords are the same way. The less there is of them the higher the vibrations. Since adults have longer, thicker vocal cords than kids, their voices are deeper.



## A Pain in the Neck

No, this section isn't about your kid brother or sister. It's about sore throats. Sometimes your nose is the heart of the problem. When you have a cold, mucus drips into your throat, bringing germs with it. That's when your tonsils come into the picture.

Your tonsils act like bodyguards for the throat. They fight germs and infections. Sometimes, however, the germs win the fight. Then your tonsils swell and you get an even worse sore throat.

Doctors used to remove sick, swollen tonsils all the time. But not anymore. One reason is that your tonsils are supposed to soak up all those germs. That's their job. So in most cases, it's best to leave tonsils in there—providing they don't get too sore.

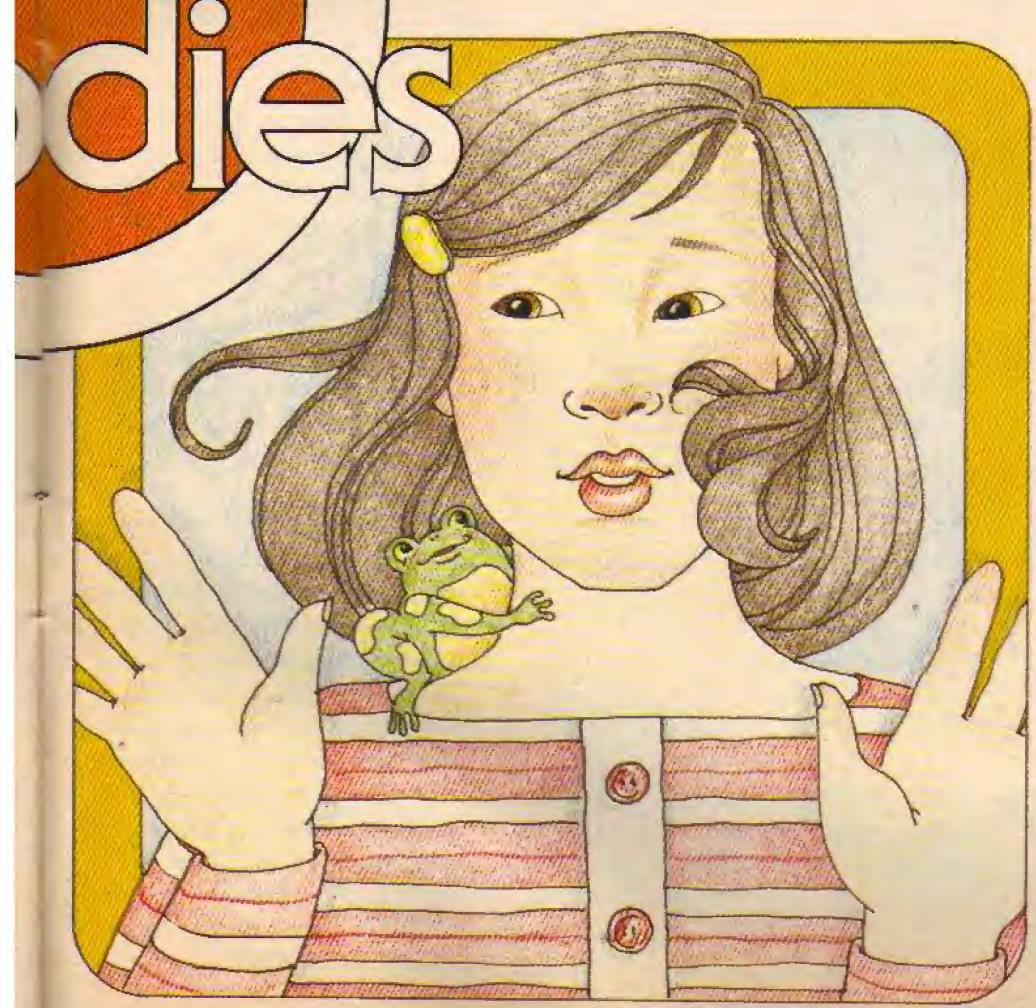
## Lumps, Frogs and Tickles

People have different expressions to describe weird feelings in their throats. Sometimes a person says she has a "lump in her throat." Or a tickle. Or a frog! In each case, there really is something going on down there.

A lump in your throat is caused by your throat muscles getting tight when you are nervous. When you're tense all over, you can be tense in your throat, too. As soon as you calm down, that strange lumpy feeling goes away.

A tickle is really a slight irritation in your throat. The lining of your throat is usually moist. But if you breathe in dust, a bit of your throat may dry out. That tickle makes you cough. This blast of air may get rid of the dust. If not, drinking a glass of water will almost always take care of this ticklish situation.

Finally there is that frog, which is caused by sore vocal cords. Your cords could be in bad shape from yelling or from an infection. In either case, until they get better (ribbet), you sound (ribbet) like a (ribbet) frog!



# Reviews &

Here are some books to read and things to do and see after reading this issue of 3-2-1 CONTACT.

## Hard Rock

Here's the hardness scale you read about on page 14. Use it to help you figure out how hard different rocks are. You probably don't have the minerals listed. But you can use the everyday objects on the list for tests.

For example, a rock that is scratched by an iron nail is softer than the nail—less than 4.5. If the same rock scratches a penny, it is harder than the penny—more than 3.5. So its hardness is about 4.

MINERAL	COMMON OBJECT
hardest	
10 Diamond	
9 Corundum	coarse sandpaper (aluminum oxide) (9.0)
8 Topaz	steel file (7.0)
7 Quartz	plate glass (6.0)
6 Orthoclase	steel knifeblade (5.5)
5 Apatite	iron nail (4.5)
4 Fluorite	copper penny (3.5)
3 Calcite	fingernail (2.0)
2 Gypsum	number 2 pencil (1.0)
1 Talc	
softest	

## Be a Collector

You read about collecting rocks on page 14. But maybe you don't want to be a rock-hound. Why not collect something else? Here are some books to get you started:

**Wildflowers Through the Year**  
Take a walk through fields or woods, along rivers or the seashore. You're sure to find wildflowers. This book has beautiful color drawings of the most common ones. You'll learn where and when each flower blooms. There are also directions for drying your flowers and starting a collection. This book is written by Malcolm Saville and published by Grosset & Dunlap.

**The Beachcomber's Book** The beach is loaded with treasures for collectors and artists. In this book, Bernice Kohn will tell you the secret of finding them. You'll learn to make collections from shells or stones, paintings from sand, even candies from beach berries. This book is published by Viking Press.



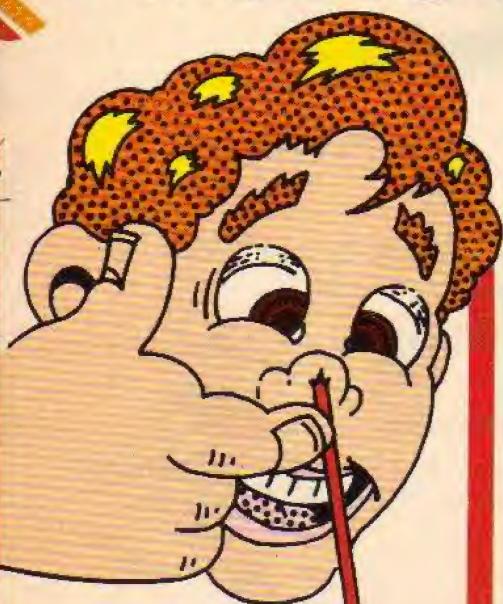
**Wonders of the Tree World** One of the easiest things to collect is leaves. After all, they're practically everywhere! This book by Margaret Cosgrove has great drawings of all kinds of leaves that will help you to learn their names and shapes. Plus, there's information on drying leaves and starting your own leaf collection. Dodd, Mead & Company publishes the book.



## Summer Safety

If you're planning an active summer, here's a booklet that can help make it a safe one, too. "75 Summer Safety Tips" will give you important information on how to swim, bike, camp and hike safely. To get your free copy, send a stamped, self-addressed envelope to:  
**75 Summer Safety Tips**  
**Everybody's Money**  
**Box 431**  
**Madison, WI 53701**

# Previews



## Seeing Double

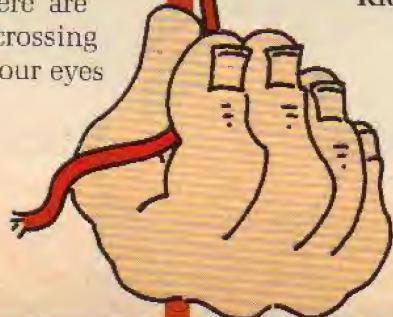
In *Any Questions?* you read how air creates optical illusions called mirages. Here's how to create a different illusion that will trick your eyes.

1. Hold one end of a piece of string to your nose. Hold the other end straight out in front of you as far as possible.
2. Focus your eyes on one point on the string. What do you see?

You should see two strings that cross where you focus your eyes.

Because they are a couple of inches apart, your eyes see things from different angles. When you focus on a spot, your brain puts the two separate images from your eyes together.

Outside the spot where your eyes are focused, you see the separate image from each eye. So it seems as if there are two different strings crossing at the point where your eyes are focused.



## 3-2-1 Contest

On page 4, you read about the strange world of symbiosis. Imagine a bird walking into a crocodile's mouth to get a meal!

Well, weird as some of this sounds, we want you to top it. Make up your own example of symbiosis. You can use animals, plants, insects—you name it. You can even use make-believe animals, if



you want. Draw them and tell how they might live together and what they do for one another. Our favorites will get T-shirts.

Send your drawing, description, name, address and T-shirt size to:

**3-2-1 Contest: Symbiosis**  
**P.O. Box 599**  
**Ridgefield, NJ 07657**



## Space Theater

This review was sent in by Jimmy Abiaka, Phoenix, AZ.

The Reuben H. Fleet Space Theater and Science Center is in San Diego, CA. It has a round dome top. You sit in a theater and watch pictures on the dome. It feels like you are really moving through space!

The Science Center is a museum. It has a room that demonstrates how clouds form. There is a machine where you pedal as fast as you can. It shows how many watts of electricity you are pumping. There is a giant pendulum, a mirror that lets you see your pupil getting larger and smaller from the light, and many other things.

It is really neat.

Been to a science museum lately? Why not write a review for *CONTACT*? If we use yours, you'll get a T-shirt. Send your review, name, address and T-shirt size to: **3-2-1 CONTACT:**

**Museum Review**  
**P.O. Box 599**  
**Ridgefield, NJ 07657**

# Experiment

## Lighten Up

Oxygen gas is everywhere, and it combines easily with many common things. As you read in *Any Questions?*, when it combines with iron it can create a problem called rust. But it can be useful too, like when it combines with things that stain your clothes. See for yourself.

### What You Need

a large glass jar  
2 paper cups  
1 eye dropper  
2 straws for stirring

dark blue writing ink  
liquid bleach  
water

### What You Do

1. Half fill one cup with water. Using the eye dropper, add one drop of ink. Stir and pour it into the jar. Set aside.
2. Fill one fourth of the other paper cup with water. Add one capful of bleach to this and stir with clean straw. Do this in the sink and be

careful! If any bleach spills, wash it down the drain and wash your hands.

3. Pour bleach mixture into the jar with the ink mixture. Watch what happens.

### Why It Works

The bleach mixture turns the inky water a lighter shade of blue. And the trick works because of oxygen.

Water is made of two elements—oxygen and hydrogen. The bleach you used has chlorine in it. When the chlorine mixes with water, it pulls oxygen particles out of the water. When these particles of oxygen meet the particles of blue dye in the ink, they all combine. This destroys the ink and causes it to break apart. The mixture loses most of its color and starts to turn clear.

The same thing happens when you use bleach on dirty clothes. Oxygen particles which are released by chlorine in the bleach combine with particles in the dirty stains. Bleaching breaks down the substances in the stains, and they fade. So no more ring around the collar!



# Did It! E I D

## Partner Maze

(page 9)



### Thank You!

Special thanks to interns Judy Casulli, Melanie Furgal, Suzanne Martinucci and Rosette Reiss for their help in preparing this issue.

## Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

### Hot Stuff

Visit a firehouse and spend a day with a fire fighter.

### Bloodhound Gang

Part Two of "The Case of the Flaming Feather."

### Pandas

Read about the most famous animal in the Mexico City zoo—a baby panda.

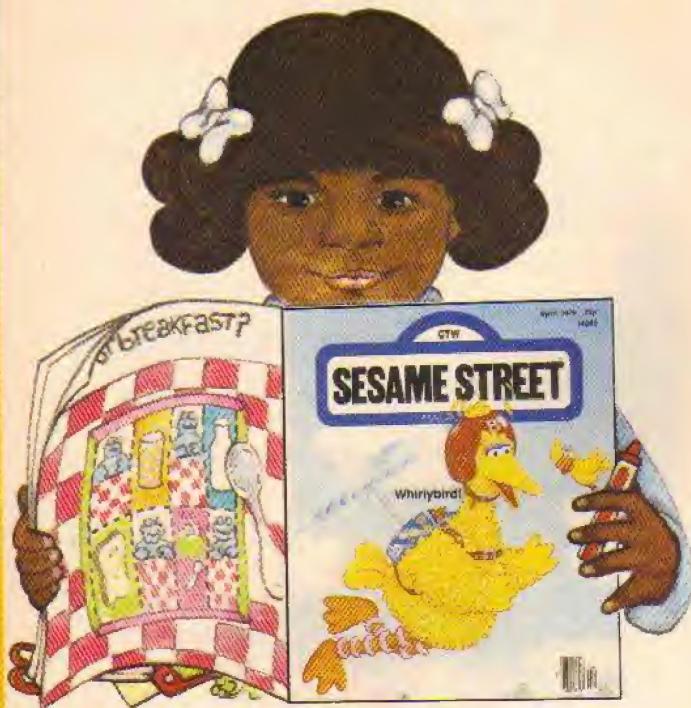
### Plus Factoids, a Poster, Puzzles and Much More!

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## Earthfacts: Beaches

Each month CONTACT will bring you another Earth Works. Save these pages in a notebook. Soon you will have your own guide to the wonders of the planet earth.

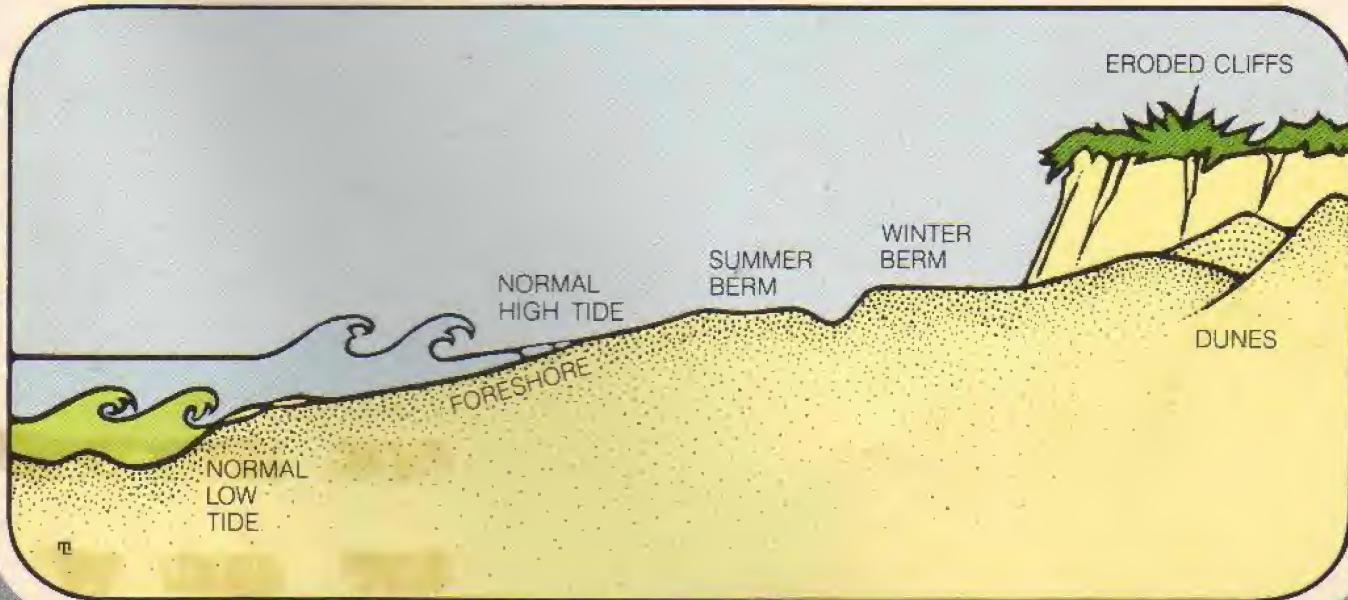
- A beach is the shore of an ocean, lake or river covered by sand, pebbles, rocks or coral.
- Beaches are formed from rock that is eaten away, or eroded, by water. Lots of erosion forms sandy beaches. Less erosion means rocky beaches.
- Eroded rock that forms beaches comes from many places. Cliffs near shore are often smashed and broken down by waves. Beach material is also carried down to the sea by rivers. Sometimes waves wash enough material onto shore to form beaches.
- If you live on the northwest coast of the United States or along parts of the New England coast, you're probably used to rocky beaches. If you live along the rest of the Atlantic coast or along the Gulf coast, your beaches are mostly sandy.
- Many beaches are made of clear bits of quartz. But in Oregon there are green beaches made of a mineral called basalt. Hawaii has black beaches made of lava. Bermuda has pink beaches made of the skeletons of tiny sea creatures called coral.
- The woods that grow behind some beaches are full of life—like rabbits, mice, foxes and deer. Assateague and Chincoteague beaches in Virginia and Maryland even have wild horses!
- Clams, shrimp, worms and crabs all live in holes under sandy beaches. At low tide you can see

# EarthWorks

the entrances to their tunnels in the wet sand.

- There are many tales of pirates who have buried treasure under beaches. Coins and other treasures have been dug out of the sand in Massachusetts, New Jersey, North Carolina and Florida.
- Rocky beaches don't have animals buried in the sand. But you can find small animals like mussels, limpets and barnacles clinging to the rocks.
- All beaches take a pounding by waves. But those on the United States' west coast take the most. Storm waves traveling 6,000 miles (9,650 km) across the Pacific slam into the coast, causing lots of erosion. On one Washington beach 200 feet (60 m) of sand was eaten away in just one year.
- Wind-blown sand forms hills called dunes on beaches. They protect parts of the beach from being washed away by storm waves. Walking on dunes can flatten them and destroy beaches they protect.

**Below:** The shape of a beach is always being changed by the waves that wash over it. Normal waves deposit and remove sand along the gently-sloping *foreshore*. Strong storm waves can move sand farther up the beach, creating wide, flat areas called berms. *Summer berms* are formed by summer storm waves; *winter berms* by more powerful winter waves.



# EarthWorks



## Beaches

Where did this California beach come from? To find the answer, just look at the rocky cliff behind it. Every few seconds waves, carrying pieces of rock, wood and shell, crash against the shore. Over many years, the wave action has broken down part of this cliff into this beach of tiny particles of rock and sand.

Most of this action doesn't happen on calm, summer days like you see here though. It happens during winter, when storm waves, sometimes 20 feet (6 m) high, slam into the shore with incredible force.

To find out more about beaches, turn to page 39.

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